

# DVP-NS305/NS310/NS315/ NS405/NS410/NS415 RMT-D141A/D142A/D1420/D142P

## SERVICE MANUAL

*Self Diagnosis*  
Supported model



Photo : DVP-NS415  
RMT-D142A



US Model  
Canadian Model  
DVP-NS315/NS415  
AEP Model  
DVP-NS305/NS310/NS405/NS410  
UK Model  
DVP-NS305/NS405  
Russian Model  
Hong Kong Model  
Korea Model  
Taiwan Model  
Saudi Arabia Model  
Singapore Model  
DVP-NS305  
Middle East Model  
Australian Model  
DVP-NS305/NS415  
PX Model  
Mexico Model  
E Model  
Argentina Model  
Brazilian Model  
DVP-NS315

### SPECIFICATIONS

#### System

**Laser:** Semiconductor laser

**Signal format system:** NTSC/PAL  
(To change the color system)

#### Audio characteristics

**Frequency response:** DVD VIDEO (PCM 96 kHz): 2 Hz to 44 kHz ( $\pm 1.0$  dB)/DVD VIDEO (PCM 48 kHz): 2 Hz to 22 kHz ( $\pm 0.5$  dB)/CD: 2 Hz to 20 kHz ( $\pm 0.5$  dB)

**Signal-to-noise ratio (S/N ratio):** 115 dB  
(LINE OUT (L/R) AUDIO jacks only)

**Harmonic distortion:** 0.003 %

**Dynamic range:** DVD VIDEO: 103 dB/CD: 99 dB

**Wow and flutter:** Less than detected value ( $\pm 0.001$  % W PEAK)

The signals from LINE OUT L/R (AUDIO) jacks are measured. When you play PCM sound tracks with a 96 kHz sampling frequency, the output signals from the DIGITAL OUT (OPTICAL or COAXIAL) jack are converted to 48 kHz sampling frequency.

#### Outputs/Inputs (DVP-NS315/NS415)

**Outputs (DVP-NS305/NS310/NS405/NS410)**  
(**Jack name:** Jack type/Output or Input level/ Load impedance)

**LINE IN (AUDIO)\*:** Phono jack/—/47 kilohms (DVP-NS315/NS415)

**LINE OUT (AUDIO):** Phono jack/2 Vrms/ Over 10 kilohms

**DIGITAL OUT (OPTICAL)\*:** Optical output jack/—18 dBm (wave length: 660 nm)

**DIGITAL OUT (COAXIAL):** Phono jack/ 0.5 Vp-p/75 ohms

**COMPONENT VIDEO OUT(Y, P<sub>B</sub>, P<sub>R</sub>):**  
Phono jack/Y: 1.0 Vp-p/P<sub>B</sub>, P<sub>R</sub>: 0.7 Vp-p/ 75 ohms (DVP-NS315/NS415)

**LINE IN (VIDEO)\*:** Phono jack/1.0 Vp-p/ 75 ohms (DVP-NS315/NS415)

**LINE OUT (VIDEO):** Phono jack/1.0 Vp-p/ 75 ohms

**S VIDEO OUT:** 4-pin mini DIN/Y: 1.0 Vp-p, C: 0.286 Vp-p/75 ohms

\* DVP-NS405/NS410/NS415 only

#### General

**Power requirements:** 120 V AC, 60 Hz/ 110 to 240V AC, 50/60 Hz  
See page 1-1 for further information.

**Power consumption:** 12 W/13 W  
See page 1-1 for further information.

**Dimensions (approx.):** 430 × 62 × 255 mm  
(17 × 2 1/2 × 10 1/8 in.) (width/height/ depth) incl. projecting parts

**Mass (approx.):** 2.3 kg (5 3/4 lb)

**Operating temperature:** 5 °C to 35 °C  
(41 °F to 95 °F)

**Operating humidity:** 25 % to 80 %

#### Supplied accessories

See page 1-3.

Specifications and design are subject to change without notice.

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CD/DVD PLAYER

SONY®

## SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer.

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the line cord for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
6. Check the B+ voltage to see it is at the values specified.
7. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

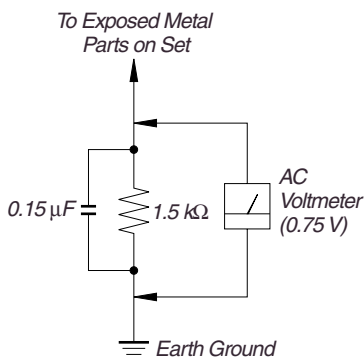


Fig. A. Using an AC voltmeter to check AC leakage.

### WARNING!!

**WHEN SERVICING, DO NOT APPROACH THE LASER EXIT WITH THE EYE TOO CLOSELY. IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMISSION, BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 25 cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.**

### CAUTION:

The use of optical instrument with this product will increase eye hazard.

### CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

### SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK  $\triangle$  OR DOTTED LINE WITH MARK  $\triangle$  ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

## LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5mA (500 microamperers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA TW-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75V, so analog meters must have an accurate low voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

## Unleaded solder

Boards requiring use of unleaded solder are printed with the lead-free mark (LF) indicating the solder contains no lead.

(Caution: Some printed circuit boards may not come printed with the lead free mark due to their particular size.)



### : LEAD FREE MARK

Unleaded solder has the following characteristics.

- Unleaded solder melts at a temperature about 40°C higher than ordinary solder.

Ordinary soldering irons can be used but the iron tip has to be applied to the solder joint for a slightly longer time.

Soldering irons using a temperature regulator should be set to about 350°C.

Caution: The printed pattern (copper foil) may peel away if the heated tip is applied for too long, so be careful!

- Strong viscosity

Unleaded solder is more viscous (sticky, less prone to flow) than ordinary solder so use caution not to let solder bridges occur such as on IC pins, etc.

- Usable with ordinary solder

It is best to use only unleaded solder but unleaded solder may also be added to ordinary solder.

CLASS 1 LASER PRODUCT  
LASER KLASSE 1  
LUOKAN 1 LASERLAITE  
KLASS 1 LASERAPPARAT

### ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE  $\triangle$  SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

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# SERVICE NOTE

## 1. DISC REMOVAL PROCEDURE (at POWER OFF)

- 1) Insert a tapering driver into the aperture of the unit bottom, and move the lever of chuck cam in the direction of the arrow A. (See Fig. 1)
- 2) Draw out the tray in the direction of the arrow B, and remove a disc. (See Fig. 1)

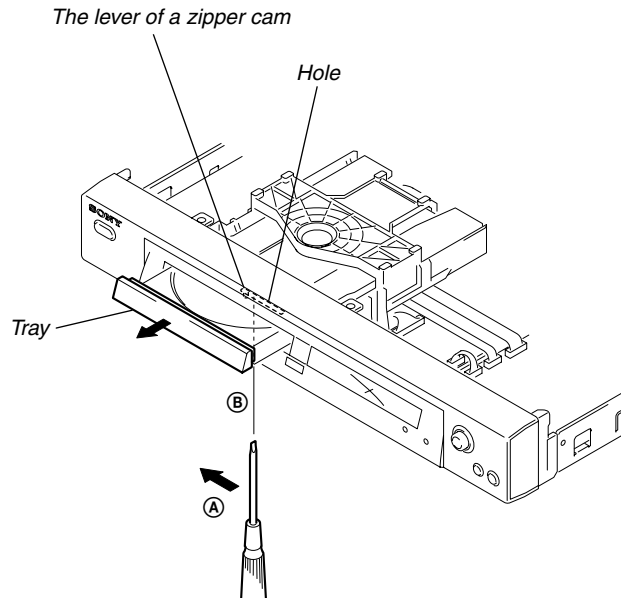


Fig. 1.

## 2. HOW TO SERVICE MB-103 BOARD

• Jig

- 1) Remove the upper case from the main unit. (Refer to 2-1)
- 2) Remove the MB-103 board. (Refer to 2-7)
- 3) Set the removed MB-103 board and CK-122 board to the stand as shown in Fig. 2.

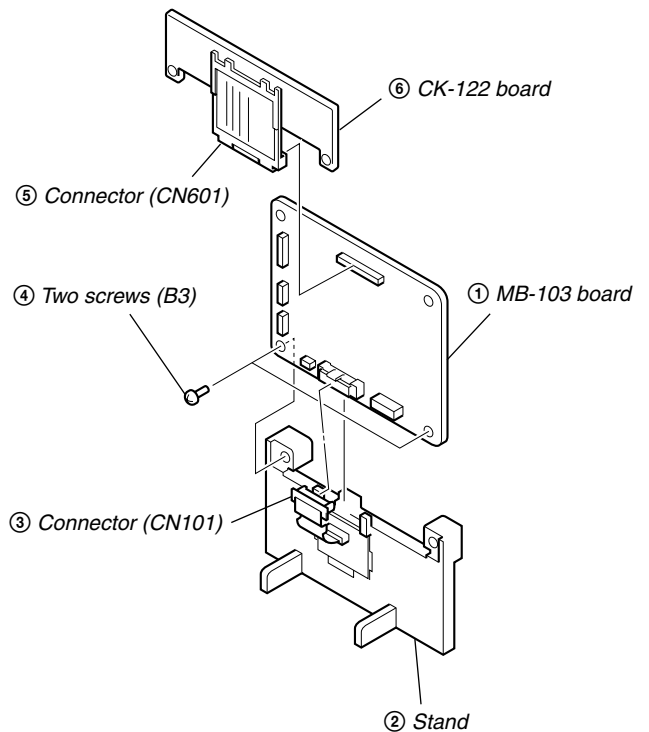
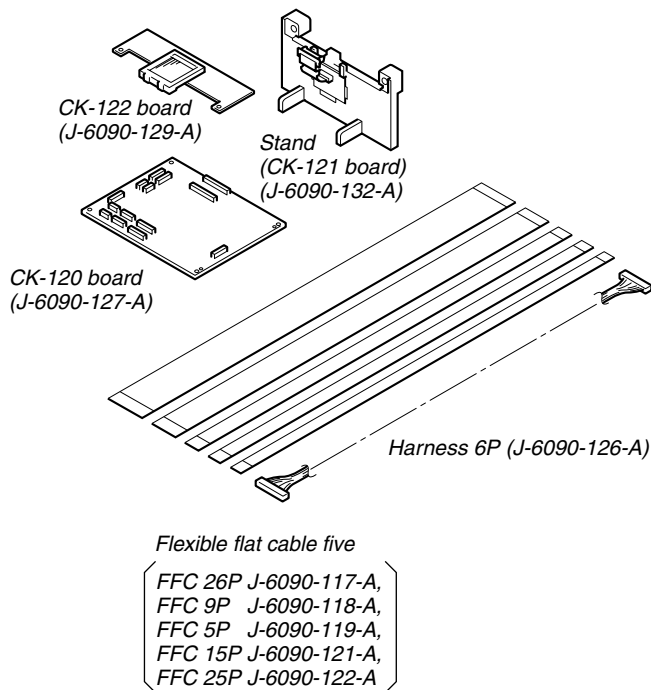
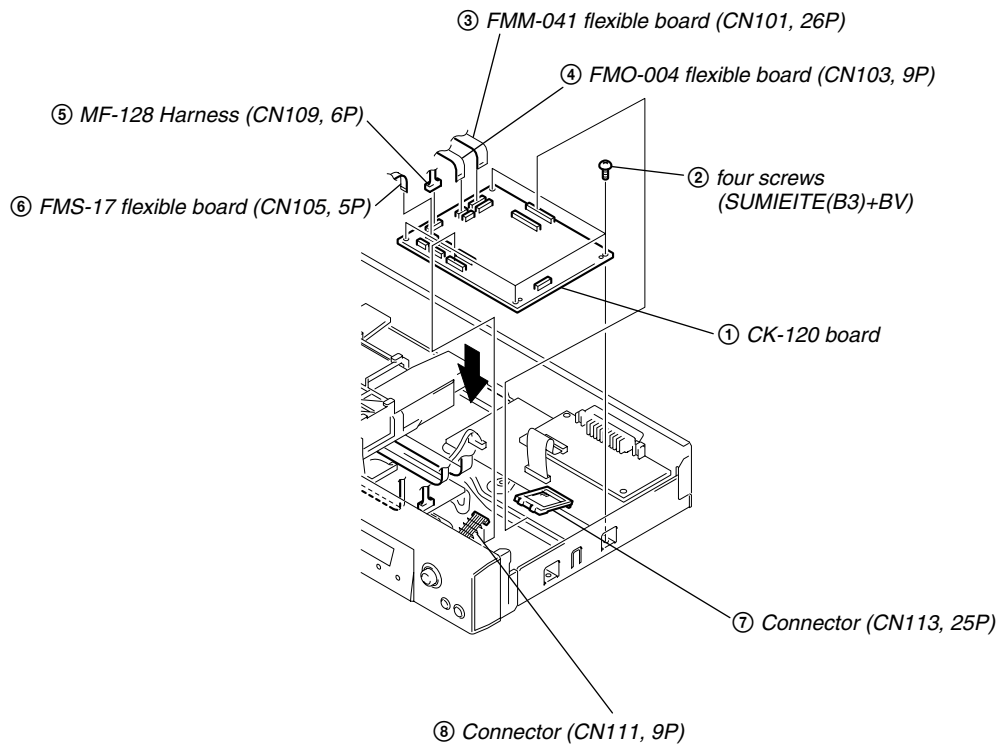


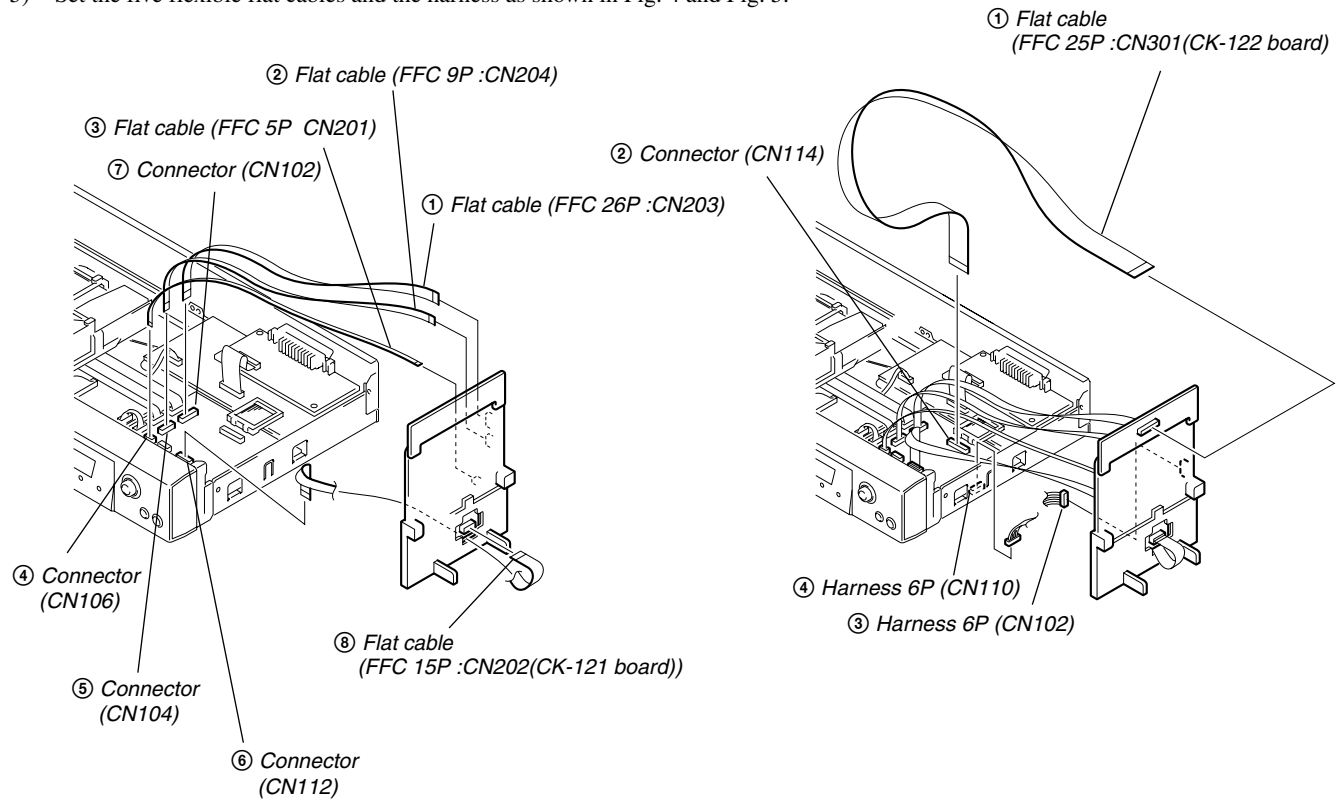
Fig. 2.

- 4) Fix the CK-120 board to the location where the MB-103 board is removed.



**Fig. 3.**

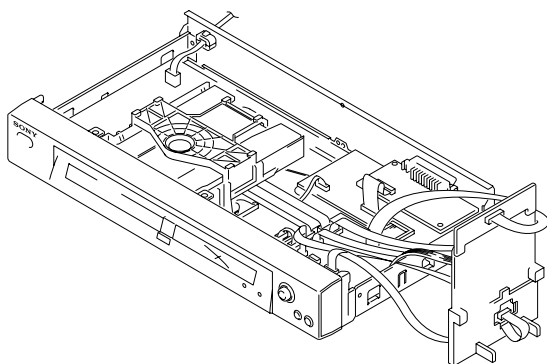
- 5) Set the five flexible flat cables and the harness as shown in Fig. 4 and Fig. 5.



**Fig. 4.**

**Fig. 5.**

6) Set complete!



**Fig. 6.**

MEMO

## SECTION 1 GENERAL

This section is extracted from instruction manual. (DVP-NS315/NS415 : 3-073-379-11)

### Precautions

- The power requirements and power consumption of this player are indicated on the back of the player. Check that the player's operating voltage is identical with your local power supply.

#### Power requirements and power consumption →



#### On safety

- Caution – The use of optical instruments with this product will increase eye hazard.
- To prevent fire or shock hazard, do not place objects filled with liquids, such as vases, on the apparatus.
- Should any solid object or liquid fall into the cabinet, unplug the player and have it checked by qualified personnel before operating it any further.

#### On power sources

- The player is not disconnected from the AC power source as long as it is connected to the wall outlet, even if the player itself has been turned off.
- If you are not going to use the player for a long time, be sure to disconnect the player from the wall outlet. To disconnect the AC power cord, grasp the plug itself; never pull the cord.
- Should the AC power cord need to be changed, have it done at a qualified service shop only.

#### On placement

- Place the player in a location with adequate ventilation to prevent heat build-up in the player.
- Do not place the player on a soft surface such as a rug that might block the ventilation holes on the bottom.
- Do not place the player in a location near heat sources, or in a place subject to direct sunlight, excessive dust, or mechanical shock.

#### For the model supplied with the AC plug adaptor

If the AC plug of your unit does not fit into the wall outlet, attach the supplied AC plug adaptor.



#### On operation

- If the player is brought directly from a cold to a warm location, or is placed in a very damp room, moisture may condense on the lenses inside the player. Should this occur, the player may not operate properly. In this case, remove the disc and leave the player turned on for about half an hour until the moisture evaporates.
- When you move the player, take out any discs. If you don't, the disc may be damaged.

#### On adjusting volume

Do not turn up the volume while listening to a section with very low level inputs or no audio signals. If you do, the speakers may be damaged when a peak level section is played.

#### On cleaning

Clean the cabinet, panel, and controls with a soft cloth slightly moistened with a mild detergent solution. Do not use any type of abrasive pad, scouring powder or solvent such as alcohol or benzene.

If you have any questions or problems concerning your player, please consult your nearest Sony dealer.

#### On cleaning discs

Do not use a commercially available cleaning disc. It may cause a malfunction.

#### IMPORTANT NOTICE

Caution: This player is capable of holding a still video image or on-screen display image on your television screen indefinitely. If you leave the still video image or on-screen display image displayed on your TV for an extended period of time you risk permanent damage to your television screen. Projection televisions are especially susceptible to this.

3

### About this Manual

#### Check your model name

The instructions in this manual are for the 2 models: DVP-NS315 and DVP-NS415. Check your model name by looking at the front panel of the player. DVP-NS415 is the model used for illustration purposes. Any difference in operation is clearly indicated in the text, for example, "DVP-NS415 only."

- Instructions in this manual describe the controls on the remote. You can also use the controls on the player if they have the same or similar names as those on the remote.
- The meaning of the icons used in this manual is described below:

Icon	Meaning
	Functions available for DVD VIDEOs or DVD-Rs/DVD-RWs in video mode
	Functions available for VIDEO CDs or CD-Rs/CD-RWs in video CD format
	Functions available for DATA CDs (CD-ROMs/CD-Rs/CD-RWs containing MP3* audio tracks)
	Functions available for music CDs or CD-Rs/CD-RWs in music CD format

\* MP3 (MPEG 1 Audio Layer 3) is a standard format defined by ISO/MPEG which compresses audio data.

### This Player Can Play the Following Discs

Format of discs	
DVD VIDEO	
VIDEO CD	

#### Format of discs

Music CD



The "DVD VIDEO" logo is a trademark.

#### Region code

Your player has a region code printed on the back of the unit and only will play DVD VIDEO discs (playback only) labeled with identical region codes. This system is used to protect copyrights.

DVDs labeled will also play on this player.

If you try to play any other DVD, the message "Playback prohibited by area limitations." will appear on the TV screen. Depending on the DVD, no region code indication may be labeled even though playing the DVD is prohibited by area restrictions.



Region code

#### Example of discs that the player cannot play

The player cannot play the following discs:

- All CD-ROMs (including PHOTO CDs)/CD-Rs/CD-RWs other than those recorded in the following formats:
  - music CD format
  - video CD format
  - MP3 format that conforms to ISO9660\* Level 1/Level 2, or its extended format, Joliet
- Data part of CD-Extras
- DVD-RWs in VR mode
- DVD-ROMs
- DVD Audio discs
- HD layer on Super Audio CDs

\* A logical format of files and folders on CD-ROMs, defined by ISO (International Standard Organization).

Also, the player cannot play the following discs:

- A DVD with a different region code.

- A disc recorded in a color system other than NTSC, such as PAL or SECAM (this player conforms to the NTSC color system).
- A disc that has a non-standard shape (e.g., card, heart).
- A disc with paper or stickers on it.
- A disc that has the adhesive of cellophane tape or a sticker still left on it.

#### Note

Some CD-Rs, CD-RWs, DVD-Rs, or DVD-RWs (in video mode) cannot be played on this player due to the recording quality or physical condition of the disc, or the characteristics of the recording device. Furthermore, the disc will not play if it has not been correctly finalized. For more information, see the operating instructions for the recording device. Note that discs created in the Packet Write format cannot be played.

#### Note on playback operations of DVDs and VIDEO CDs

Some playback operations of DVDs and VIDEO CDs may be intentionally set by software producers. Since this player plays DVDs and VIDEO CDs according to the disc contents the software producers designed, some playback features may not be available. Also, refer to the instructions supplied with the DVDs or VIDEO CDs.

#### Copyrights

This product incorporates copyright protection technology that is protected by method claims of certain U.S. patents, other intellectual property rights owned by Macrovision Corporation, and other rights owners. Use of this copyright protection technology must be authorized by Macrovision Corporation, and is intended for home and other limited viewing uses only unless otherwise authorized by Macrovision Corporation. Reverse engineering or disassembly is prohibited.

### Notes about the Discs

- To keep the disc clean, handle the disc by its edge. Do not touch the surface.



- Do not expose the disc to direct sunlight or heat sources such as hot air ducts, or leave it in a car parked in direct sunlight as the temperature may rise considerably inside the car.
- After playing, store the disc in its case.
- Clean the disc with a cleaning cloth. Wipe the disc from the center out.



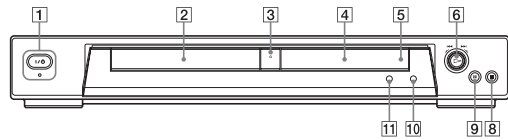
- Do not use solvents such as benzene, thinner, commercially available cleaners, or anti-static spray intended for vinyl LPs.

# Index to Parts and Controls

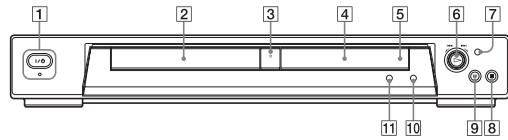
For more information, refer to the pages indicated in parentheses.

## Front panel

### DVP-NS315



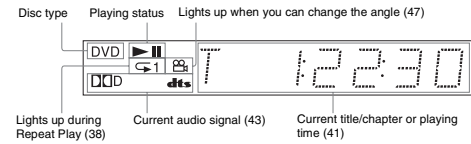
### DVP-NS415



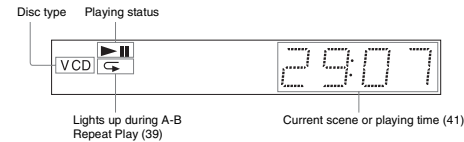
- |   |   |
|---|---|
| 1  (on/standby) button/indicator (27)<br>Lights up in green when the power is on and lights up in red when the player is in standby mode. | 6 Playback Dial (DVP-NS315) (28) (30)<br>Multi-mode Playback Dial (DVP-NS415) (28) (30) |
| 2  (27)   | 7 MODE CHANGE button (DVP-NS415 only) (30)  |
| 3  (27)   | 8  (stop) button (28)   |
| 4 Front panel display (9)   | 9  (surround) button (44)   |
| 5  (remote sensor) (15)   | 10 SURROUND button (44)   |
|   | 11 PICTURE MODE button (49)   |

## Front panel display

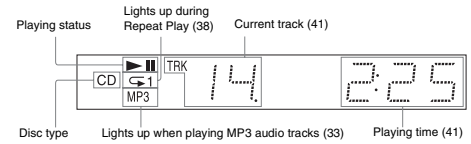
### When playing back a DVD



### When playing back a VIDEO CD with Playback Control (PBC) (32)

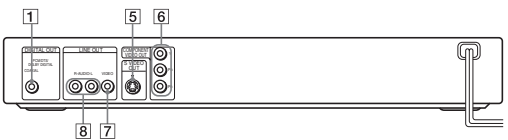


### When playing back a CD, DATA CD (MP3 audio), or VIDEO CD (without PBC)

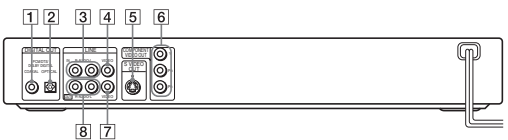


## Rear panel

### DVP-NS315



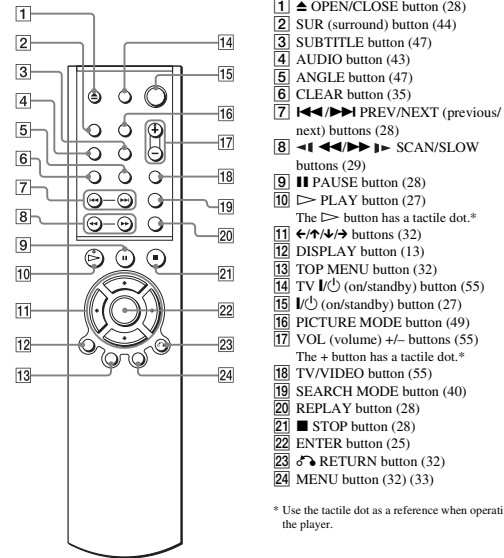
### DVP-NS415



- |  |   |
|--|---|
| 1 DIGITAL OUT (COAXIAL) jack (22) (23) (24)                  | 5 S VIDEO OUT jack (18)                     |
| 2 DIGITAL OUT (OPTICAL) jack (DVP-NS415 only) (22) (23) (24) | 6 COMPONENT VIDEO OUT jacks (18)            |
| 3 LINE IN L/R (AUDIO) jacks (DVP-NS415 only) (16) (18)       | 7 LINE OUT (VIDEO) jack (18)                |
| 4 LINE IN (VIDEO) jack (DVP-NS415 only) (16) (18)            | 8 LINE OUT L/R (AUDIO) jacks (21) (22) (23) |

## Remote

### DVP-NS315



\* Use the tactile dot as a reference when operating the player.

- \* Use the tactile dot as a reference when operating the player

A diagram of a video player control bar with numbered callouts 1 through 6. The callouts point to the following controls: 1. Previous button, 2. Play/Pause button, 3. Stop button, 4. Full Screen button, 5. Chapter button, 6. Next button.

- 
- A diagram of a video player interface. Four numbered callouts (7, 8, 9, 10) point to the playback controls. Callout 7 points to the play/pause button, 8 points to the stop button, 9 points to the previous button, and 10 points to the next button.

- 

- 
- DOLBY DIGITAL 3/2.1
- 15

- ◆Return to Display 1

- CHAPTER

- 
- A screenshot of a web browser's address bar. It contains a search engine URL, likely Google, with a search bar and navigation buttons (back, forward, stop, reload) visible on the left.

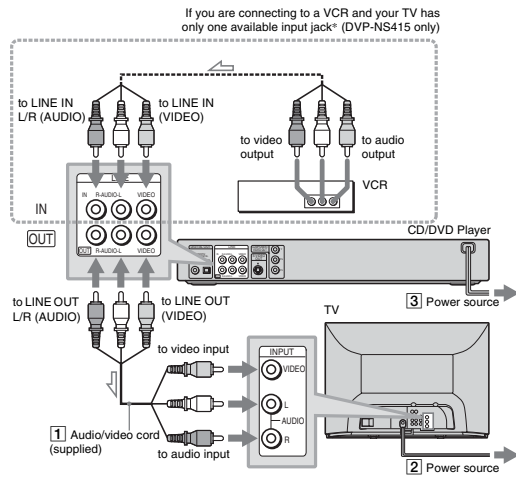
- T41 - 8 T 1:01:57

- ◆Return to Display 1

## 15

### Step 3: TV Hookups

Connect the supplied audio/video cord and the power cord in the order (1)–(3) shown below. Be sure to connect the power cord last.



**\* If you are connecting a VCR and your TV has only one available input jack (DVP-NS415 only)**

If your TV has only one available input jack, connect your VCR or similar device to the LINE IN jacks on the player. In order to view the pictures from your VCR, the DVD player must be in standby mode. Note that the DVD player will only pass signals through the LINE jacks and will not output the VCR signals from any other jack.

If your TV has more than one available input jack, connect your VCR directly to your TV.

**When connecting to a wide screen TV**

Depending on the disc, the image may not fit your TV screen.

If you want to change the aspect ratio, please refer to page 59.

**When connecting to a monaural TV**

Use a stereo-mono conversion cord (not supplied). Connect the LINE OUT (VIDEO) jack on the player to the TV's video input jack, and connect the LINE OUT L/R (AUDIO) jacks to the TV's audio input jack.

16

17

### Hookups

### Hooking Up the Player

Follow Steps 1 to 4 to hook up and adjust the settings of the player.

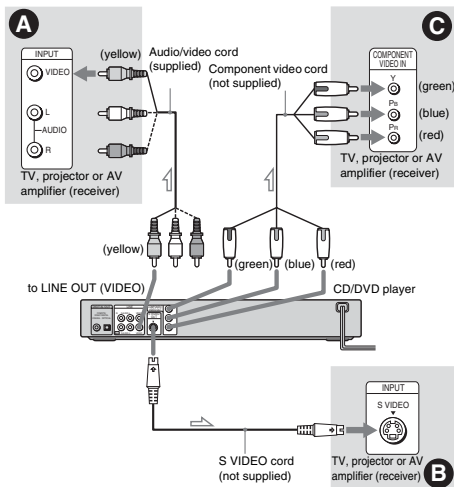
Before you start, disconnect the power cords, check that you have all of the supplied accessories, and insert the batteries into the remote (page 15).

#### Notes

- Plug cords securely to prevent unwanted noise.
- Refer to the instructions supplied with the components to be connected.

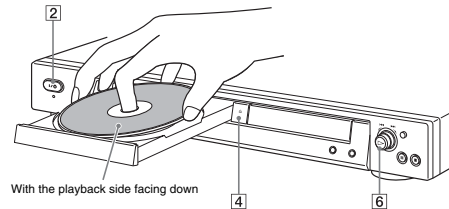
### Step 1: Connecting the Video Cords

Connect this player to your TV monitor, projector, or AV amplifier (receiver) using a video cord. Select one of the patterns A through C, according to the input jack on your TV monitor, projector, or AV amplifier (receiver).



18

### Step 4: Playing a Disc



- 1 Turn on the TV.
  - 2 Press I/O on the player.
  - 3 Switch the input selector on your TV so that the signal from the player appears on the TV screen.
  - 4 Press Eject on the player to open the disc tray.
  - 5 Place the disc on the tray with the playback side facing down.
  - 6 Press Play.
- The disc tray closes and the player begins playing the disc.

#### After Step 6

Depending on the disc, a menu may be displayed on the TV screen. If so, select the item you want from the menu and play the DVD (page 32) or VIDEO CD disc (page 32).

#### To stop playing

Press Stop.

#### To remove the disc

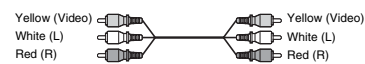
Press Eject.

#### To turn off the player

Press I/O. The player enters standby mode and the power indicator lights up in red.

#### A If you are connecting to a video input jack

Connect the yellow plug of the audio/video cord (supplied) to the yellow (video) jacks. You will enjoy standard quality images.



Use the red and white plugs to connect to the audio input jacks (page 21). (Do this if you are connecting to a TV only.)

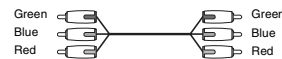
#### B If you are connecting to an S VIDEO input jack

Connect an S VIDEO cord (not supplied). You will enjoy high quality images.



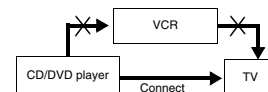
#### C If you are connecting to a monitor, projector, or AV amplifier (receiver) having component video input jacks (Y, Pb, Pr)

Connect the component via the COMPONENT VIDEO OUT jacks using a component video cord (not supplied) or three video cords (not supplied) of the same kind and length. You will enjoy accurate color reproduction and high quality images.



#### Notes

- Connect the player directly to the TV. If you pass the player signals via the VCR, you may not receive a clear image on the TV screen.



- If your TV has only one available audio/video input jack, connect the VCR to the LINE IN jacks on the player (DVP-NS415 only). In order to view the pictures from your VCR, the DVD player must be in standby mode (page 16).



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## Step 2: Connecting the Audio Cords

Refer to the chart below to select the connection that best suits your system. Be sure to also read the instructions for the components you wish to connect.

### Select a connection

Select one of the following connections, **A** through **D**.

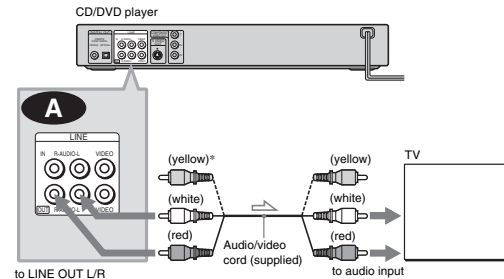
Components to be connected	Connection
<b>TV</b>	<b>A</b> (page 21)
<b>Stereo amplifier (receiver)</b> (having L and R audio input jacks only, or having a digital input jack) • 2 speakers (front L and R)	<b>B</b> (page 22)
<b>MD deck/DAT deck</b>	<b>B</b> (page 22)
<b>AV amplifier (receiver) with a Dolby® Surround (Pro Logic) decoder</b> (having L and R audio input jacks only, or having a digital input jack) • 3 speakers (front L and R, and rear (monaural)) or • 6 speakers (front L and R, center, rear L and R, subwoofer)	<b>C</b> (page 23)
<b>AV amplifier (receiver) having a Dolby Digital or DTS** decoder and a digital input jack</b> • 6 speakers (front L and R, center, rear L and R, subwoofer)	<b>D</b> (page 24)

\* Manufactured under license from Dolby Laboratories. "Dolby," "Pro Logic," and the double-D symbol are trademarks of Dolby Laboratories.

\*\* "DTS" and "DTS Digital Out" are trademarks of Digital Theater Systems, Inc.

### A Connecting to your TV

This connection will use your TV speakers for sound.



→ : Signal flow

\* The yellow plug is used for video signals (page 18).

#### ◆ Recommended surround sound effects for this connection

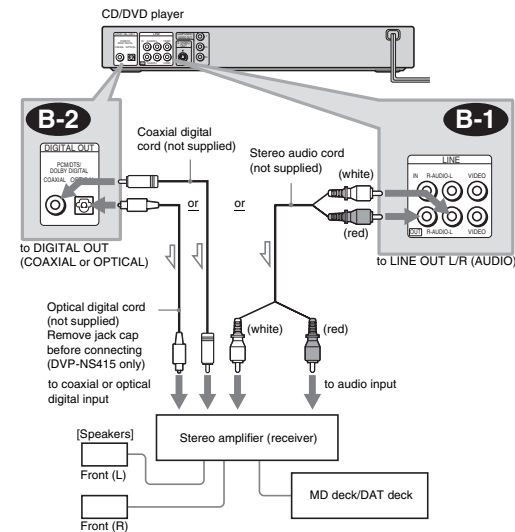
- TVS DYNAMIC (page 45)
- TVS WIDE (page 45)

#### ⚡ Hint

When connecting to a monaural TV, use a stereo-mono conversion cord (not supplied). Connect the LINE OUT L/R (AUDIO) jacks to the TV's audio input jack.

### B Connecting to a stereo amplifier (receiver) and 2 speakers/Connecting to an MD deck or DAT deck

If the stereo amplifier (receiver) has audio input jacks L and R only, use **B-1**. If the amplifier (receiver) has a digital input jack, or when connecting to an MD deck or DAT deck, use **B-2**. In this case, you can also connect the player directly to the MD deck or DAT deck without using your stereo amplifier (receiver).



→ : Signal flow

#### ◆ Recommended surround sound effects for the B-1 connection only

- TVS STANDARD (page 45)

#### ⚡ Hint

In connection **B-1**, you can use the supplied audio/video cord instead of using a separate audio cord.

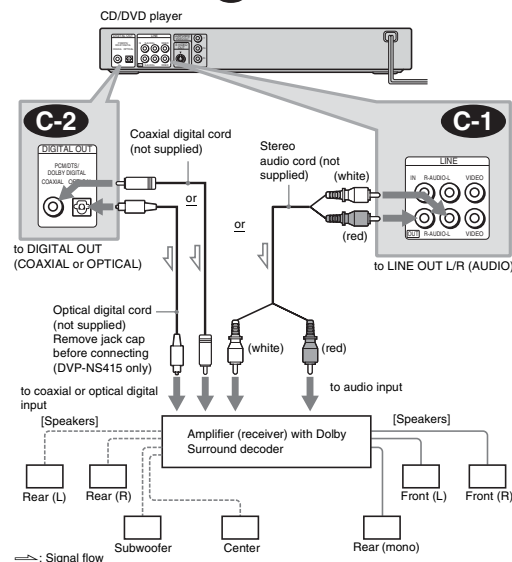
#### Note

If you select one of the TVS effects (page 44) while playing a disc, no sound will come from your speakers with the **B-2** connection.

### C Connecting to an AV amplifier (receiver) having a Dolby Surround (Pro Logic) decoder and 3 to 6 speakers

You can enjoy the Dolby Surround effects only when playing Dolby Surround audio or multi-channel audio (Dolby Digital) discs.

If your amplifier (receiver) has L and R audio input jacks only, use **C-1**. If your amplifier (receiver) has a digital input jack, use **C-2**.



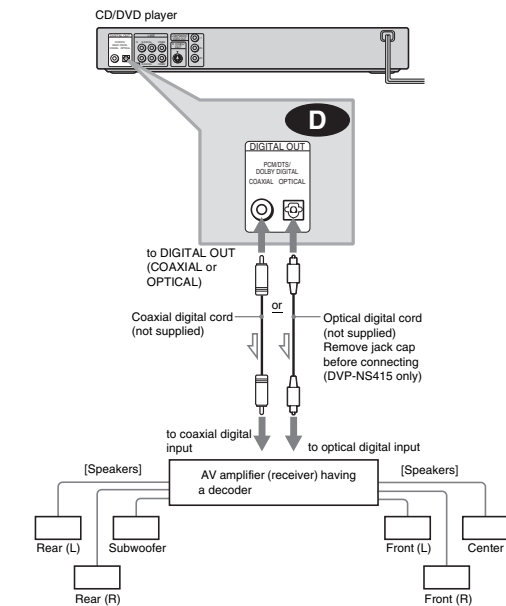
→ : Signal flow

#### Note

When connecting 6 speakers, replace the monaural rear speaker with a center speaker, 2 rear speakers and a subwoofer.

## D Connecting to an AV amplifier (receiver) with a digital input jack having a Dolby Digital or DTS decoder and 6 speakers

This connection will allow you to use the Dolby Digital or DTS decoder function of your AV amplifier (receiver). You are not able to enjoy the surround sound effects of this player.



### Note

After you have completed the connection, be sure to set "DOLBY DIGITAL" to "DOLBY DIGITAL" and "DTS" to "ON" (page 25) in Quick Setup. Otherwise, no sound or a loud noise will come from the speakers.

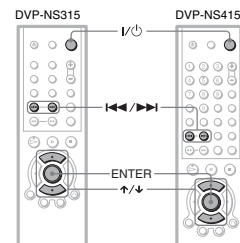
24

## Step 3: Connecting the Power Cord

Plug the player and TV power cords into an AC outlet.

## Step 4: Quick Setup

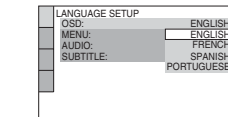
Follow the steps below to make the minimum number of basic adjustments for using the player. To skip an adjustment, press **▶▶**. To return to the previous adjustment, press **◀◀**.



- 1 Turn on the TV.
- 2 Press **I/⏻**.
- 3 Switch the input selector on your TV so that the signal from the player appears on the TV screen.

"Press [ENTER] to run QUICK SETUP" appears at the bottom of the screen. If this message does not appear, select "QUICK" under "SETUP" in the Control Bar to run Quick Setup (page 58).

- 4 Press ENTER without inserting a disc.
- The Setup Display for selecting the language used in the on-screen display appears.

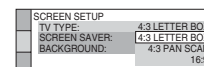


- 5 Press **↑/↓** to select a language.

The player uses the language selected here to display the menu and subtitles as well.

- 6 Press ENTER.

The Setup Display for selecting the aspect ratio of the TV to be connected appears.



- 7 Press **↑/↓** to select the setting that matches your TV type.

- ◆ If you have a 4:3 standard TV
  - 4:3 LETTER BOX or 4:3 PAN SCAN (page 59)
- ◆ If you have a wide-screen TV or a 4:3 standard TV with a wide-screen mode
  - 16:9 (page 59)

- 8 Press ENTER.

The Setup Display for selecting the type of jack used to connect your amplifier (receiver) appears.

→ continued 25

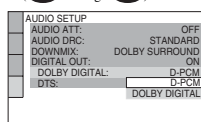
- 9 Press **↑/↓** to select the type of jack (if any) you are using to connect to an amplifier (receiver), then press ENTER.

Choose the item that matches the audio connection you selected on pages 21 to 24 (A through D).

- If you connect just a TV and nothing else, select "NO." Quick Setup is finished and connections are complete.
- B-1 C-1 Select "LINE OUTPUT L/R (AUDIO)." Quick Setup is finished and connections are complete.
- B-2 C-2 D Select "DIGITAL OUTPUT." The Setup Display for "DOLBY DIGITAL" appears.

- 10 Press **↑/↓** to select the type of Dolby Digital signal you wish to send to your amplifier (receiver).

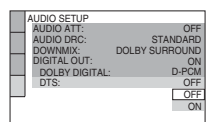
Choose the signal that matches the audio connection you selected on pages 22 to 24 (B through D).



- B-2 C-2 D-PCM (page 62)
- D DOLBY DIGITAL (only if the amplifier (receiver) has a Dolby Digital decoder) (page 62)

- 11 Press ENTER.

"DTS" is selected.



- 12 Press **↑/↓** to select whether or not you wish to send a DTS signal to your amplifier (receiver).

Choose the item that matches the audio connection you selected on pages 22 to 24 (B through D).

- B-2 C-2 D-PCM (page 62)
- D ON (only if the amplifier (receiver) has a DTS decoder) (page 62)

- 13 Press ENTER.

Quick Setup is finished. All connections and setup operations are complete.

## Enjoying the surround sound effects

To enjoy the surround sound effects of this player or your amplifier (receiver), set the following items as described below for the audio connection you selected on pages 22 to 24 (B through D). Each of these is the default setting and does not need to be adjusted when you first connect the player. Refer to page 57 for using the Setup Display.

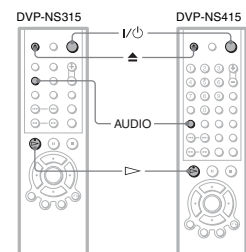
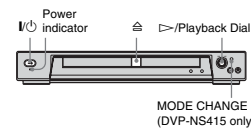
### Audio Connection (pages 21 to 24)

- A No additional settings are needed.
- B-1 C-1 Set "DOWNMIX" to "DOLBY SURROUND" (page 61)
- If the sound distorts even when the volume is turned down, set "AUDIO ATT" to "ON" (page 61)
- B-2 C-2 D Set "DOWNMIX" to "DOLBY SURROUND" (page 61)
- Set "DIGITAL OUT" to "ON" (page 61)

## Playing Discs

### Playing Discs DVD VCD CD

Depending on the DVD or VIDEO CD, some operations may be different or restricted. Refer to the operating instructions supplied with your disc.



- 1 Turn on your TV.
- 2 Press **I/⏻**.
- 3 Switch the input selector on your TV so that the signal from the player appears on the TV screen.

◆ When using an amplifier (receiver) Turn on the amplifier (receiver) and select the appropriate channel so that you can hear sound from the player.

- 4 Press **⏮** on the player, and place a disc on the disc tray.



With the playback side facing down

- 5 Press **▶**.

The disc tray closes, and the player starts playback (continuous play). Adjust the volume on the TV or the amplifier (receiver). Depending on the disc, a menu may appear on the TV screen. For DVDs, see page 32. For VIDEO CDs, see page 32.

### To turn off the player

Press **I/⏻**. The player enters standby mode.

### Hint

You can have the player turn off automatically whenever you leave it in stop mode for more than 30 minutes. To turn on this function, set "AUTO POWER OFF" in "CUSTOM SETUP" to "ON" (page 60).

### Notes on playing DTS sound tracks on a CD

- When playing DTS-encoded CDs, excessive noise will be heard from the analog stereo jacks. To avoid possible damage to the audio system, the consumer should take proper precautions when the analog stereo jacks of the player are connected to an amplification system. To enjoy DTS Digital Surround™ playback, an external 5.1-channel decoder system must be connected to the digital jack of the player.
- Set the sound to "STEREO" using the AUDIO button when you play DTS sound tracks on a CD (page 43).
- Do not play DTS sound tracks without first connecting the player to an audio component having a built-in DTS decoder. The player outputs the DTS signal via the DIGITAL OUT (COAXIAL or OPTICAL) jack even if "DTS" in "AUDIO SETUP" is set to "OFF" in the Setup Display (page 62).

→ continued 27

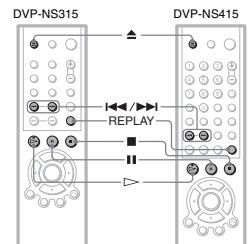
26

and may affect your ears or cause your speakers to be damaged.

#### Notes on playing DVDs with a DTS sound track

- DTS audio signals are output only through the DIGITAL OUT (COAXIAL or OPTICAL) jack.
- When you play a DVD with DTS sound tracks, set "DTS" to "ON" in "AUDIO SETUP" (page 62).
- If you connect the player to audio equipment without a DTS decoder, do not set "DTS" to "ON" in "AUDIO SETUP" (page 62). A loud noise may come out from the speakers, affecting your ears or causing the speakers to be damaged.

#### Additional operations



To	Operation
Stop	Press ■
Pause	Press II
Resume play after pause	Press II or ▷
Go to the next chapter, track, or scene in continuous play mode	Press ►► on the remote, or briefly turn the Playback Dial* on the player clockwise
Go back to the previous chapter, track, or scene in continuous play mode	Press ◄◄ on the remote, or briefly turn the Playback Dial* on the player counterclockwise
Stop play and remove the disc	Press ▲

To	Operation
----	-----------

Replay the previous scene (DVD only) Press REPLAY

\* Operable when the MODE CHANGE indicator lights up in green or turns off. For more details about the Multi-mode Playback Dial, see page 30 (DVP-NS415 only).

#### Hint

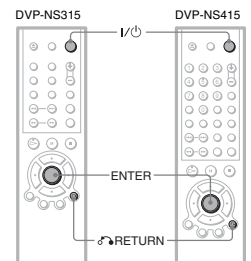
The Replay function is useful when you want to review a scene or dialog that you missed.

#### Note

You may not be able to use the Replay function with some scenes.

#### Locking the disc tray (Child Lock)

You can lock the disc tray to prevent children from opening it.



**When the player is in standby mode, press ⏻ RETURN, ENTER, and then I/⏻ on the remote.**

The player turns on and "LOCKED" appears on the front panel display.

The ▲ button on the player or the remote does not work while the Child Lock is set.

#### To unlock the disc tray

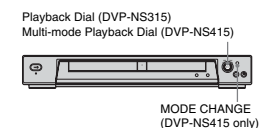
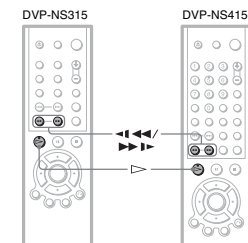
When the player is in standby mode, press ⏻ RETURN, ENTER, and then I/⏻ again.

#### Note

Even if you select "RESET" under "SETUP" in the Control Bar (page 58), the disc tray remains locked.

## Searching for a Particular Point on a Disc (Scan, Slow-motion Play, Search, Freeze Frame)

You can quickly locate a particular point on a disc by monitoring the picture or playing back slowly.



#### Note

Depending on the DVD/VIDEO CD, you may not be able to do some of the operations described.

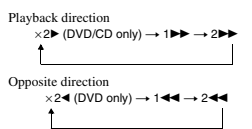
## Locating a point quickly by playing a disc in fast forward or fast reverse (Scan) DVD VCD CD

#### DATA-CD

Press ◄◄ ◄◄ or ►► ►► while playing a disc. When you find the point you want, press ▷ to return to normal speed. Each time you press ◄◄ ◄◄ or ►► ►► during scan, the playback speed changes. Three speeds are available. With each press the indication changes as follows:

→ continued 29

28

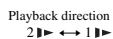


The "×2" "1/2" "×2" playback speed is about twice the normal speed. The "2" "1/2" "2" "1/2" playback speed is faster than "1" "1/2" "1" "1/2".

## Watching frame by frame (Slow-motion play) DVD VCD

Press ◄◄ ◄◄ or ►► ►► when the player is in pause mode. To return to the normal speed, press ▷.

Each time you press ◄◄ ◄◄ or ►► ►► during Slow-motion play, the playback speed changes. Two speeds are available. With each press the indication changes as follows:



Opposite direction (DVD only)  
2 ◄◄ ◄◄ 1 ◄◄

The "2" "1/2" "2" "1/2" playback speed is slower than "1" "1/2" "1" "1/2".

## Using the Playback Dial on the player (DVP-NS315 only) DVD VCD CD DATA-CD

You can search for a particular point on a disc in various ways using the Playback Dial.

#### To go to the next chapter/track/scene

During playback, briefly turn the Playback Dial clockwise to skip to the next chapter/track/scene, or counterclockwise to skip to the previous ones.

#### To locate a point quickly (Search)

During playback, turn and hold the Playback Dial clockwise to locate a point in the playback direction, or counterclockwise to locate a point in the opposite direction. When you find the point you want, release the dial to return to normal playback speed.

## Using the Multi-mode Playback Dial on the player (DVP-NS415 only) DVD VCD CD DATA-CD

You can search for a particular point on a disc in various ways using the MODE CHANGE button.

#### To go to the next chapter/track/scene

During playback and with the MODE CHANGE indicator turned off, briefly turn the Multi-mode Playback Dial clockwise to skip to the next chapter/track/scene, or counterclockwise to skip to the previous ones. (The same operation can be made when the MODE CHANGE indicator lights up in green.)

#### To locate a point quickly (Search)

During playback and with the MODE CHANGE indicator turned off, turn and hold the Multi-mode Playback Dial clockwise to locate a point in the playback direction, counterclockwise to locate a point in the opposite direction. When you find the point you want, release the dial to return to normal playback speed.

#### To locate a specific title/chapter/track

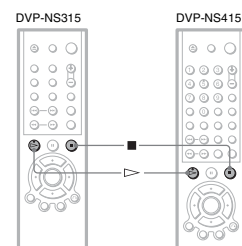
- 1 Press MODE CHANGE repeatedly so that the indicator lights up in green.
- 2 During playback, turn and hold the Multi-mode Playback Dial clockwise to locate succeeding titles/chapters/tracks, or counterclockwise to locate preceding ones.

#### To play one frame at a time (Freeze Frame) DVD VCD

- 1 Press MODE CHANGE repeatedly so that the indicator lights up in amber.
- 2 During playback, turn the Multi-mode Playback Dial clockwise to go to the next frame, or counterclockwise to go to the previous frame. If you turn and hold the dial, you can view the frames in succession.

## Resuming Playback from the Point Where You Stopped the Disc (Resume Play/Multi-disc Resume)

The player remembers the point where you stopped the disc.



## Resuming playback for the current disc (Resume Play) DVD VCD CD DATA-CD

The player remembers the point where you stopped the disc even if the player enters standby mode by pressing I/⏻.

- 1 While playing a disc, press ■ to stop playback. "RESUME" appears on the front panel display.

- 2 Press ▷. The player starts playback from the point where you stopped the disc in Step 1.

#### Hint

To play from the beginning of the disc, press ■ twice, then press ▷.

#### Notes

- The point where you stopped playing is cleared when:
  - you change the play mode.
  - you change the settings on the Setup Display.
  - you open the disc tray (DVP-NS315 only).
  - you disconnect the power cord.
- When playing a CD, the point where you stopped is cleared when the disc tray is opened or the power cord is disconnected.
- When playing a DATA CD, the point where you stopped playing is cleared when the player enters standby mode, the disc tray is opened, or the power cord is disconnected.
- This function may not work with some discs.

## Storing the point where you stopped the disc (Multi-disc Resume) (DVP-NS415 only) DVD VCD

The player stores the point where you stopped the disc and resumes playback from the same point the next time you insert the same disc. Resume playback points for up to 6 different DVD/VIDEO discs remain in memory even if you disconnect the power cord. When you store a resume playback point for the seventh disc, the resume playback point for the first disc is deleted.

#### Hints

- To play from the beginning of the disc, press ■ twice, then press ▷.
- To turn off the Multi-disc Resume function, set "MULTI-DISC RESUME" in "CUSTOM SETUP" to "OFF" (page 60). Playback restarts at the resume point only for the current disc in the player.

#### Notes

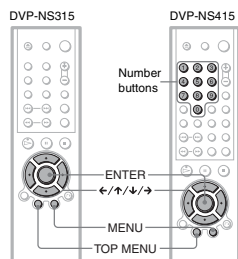
- The point where you stopped playing is cleared when:
  - you change the play mode.
  - you change the settings on the Setup Display.
- This function may not work with some discs.

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## Using the DVD's Menu DVD

A DVD is divided into long sections of a picture or a music feature called "titles." When you play a DVD which contains several titles, you can select the title you want using the TOP MENU button. When you play DVDs that allow you to select items such as the language for the subtitles and the language for the sound, select these items using the MENU button.



### 1 Press TOP MENU or MENU.

The disc's menu appears on the TV screen. The contents of the menu vary from disc to disc.

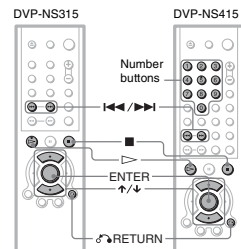
### 2 Press ←/→/↵ to select the item you want to play or change.

You can also use the number buttons to select the item. (DVP-NS415 only)

### 3 Press ENTER.

## Playing VIDEO CDs with PBC Functions (PBC Playback) VCD

PBC (Playback Control) allows you to play VIDEO CDs interactively by following the menu on the TV screen.



### 1 Start playing a VIDEO CD with PBC functions.

The menu for your selection appears.

### 2 Select the item number you want by pressing ↵/↵.

You can also use the number buttons to select the item number and track. (DVP-NS415 only)

### 3 Press ENTER.

### 4 Follow the instructions in the menu for interactive operations.

Refer to the instructions supplied with the disc, as the operating procedure may differ depending on the VIDEO CD.

To return to the menu  
Press ⏮ RETURN.

#### Hint

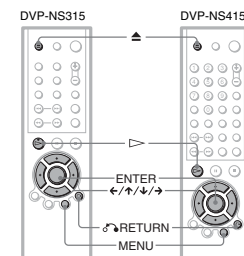
To play without using PBC, press ⏮⏭⏭ while the player is stopped to select a track, then press ⏭ or ENTER.  
"Play without PBC" appears on the TV screen and the player starts continuous play. You cannot play still pictures such as a menu.  
To return to PBC playback, press ■ twice then press ⏭.

#### Note

Depending on the VIDEO CD, "Press ENTER" in Step 3 may appear as "Press SELECT" in the instructions supplied with the disc. In this case, press ⏭.

## Playing an MP3 Audio Track DATA-CD

You can play back DATA CDs (CD-ROMs/CD-Rs/CD-RWs) recorded in MP3 (MPEG1 Audio Layer 3) format.



### 1 Press ▲ and place a DATA CD on the disc tray.

### 2 Press ▷.

The disc tray closes, and the player starts to play the first MP3 audio track in the first album on the disc.

#### Notes

- This player can play MP3 audio tracks recorded in the following sampling frequencies: 32kHz, 44.1kHz, 48kHz.
- The playback order may be different from the edited order. See "The Playback order of MP3 audio tracks" below for details.

## Selecting an album and track

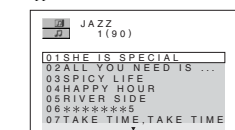
### 1 Press MENU.

The list of MP3 albums recorded on the DATA CD appears.



### 2 Select an album using ↵/↵ and press ENTER.

The list of tracks contained in the album appears.



### 3 Select a track using ↵/↵ and press ENTER.

The selected track starts playing. When a track or album is being played, its title is shaded.

To go to the next or previous page  
Press → or ←.

To return to the previous display  
Press ⏮ RETURN.

To turn off the display  
Press MENU.

#### Notes

- Only the letters in the alphabet and numbers can be used for album or track names. Anything else is displayed as an asterisk.
- ID3 tags cannot be displayed.

## About MP3 audio tracks

You can play MP3 audio tracks on CD-ROMs, CD-Rs, or CD-RWs. However, the discs must be recorded according to ISO9660 level 1, level 2, or Joliet format for the player to recognize the tracks. You can also play discs recorded in Multi Session.

See the instructions of the CD-R/RW device or recording software (not supplied) for details on the recording format.

### To play a Multi Session CD

This player can play Multi Session CDs when an MP3 audio track is located in the first session. Any subsequent MP3 audio tracks, recorded in the later sessions, can also be played back.

When audio tracks and images in music CD format or video CD format are recorded in the first session, only the first session will be played back.

#### Notes

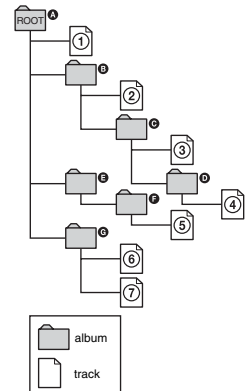
- If you put the extension ".MP3" to data not in MP3 format, the player cannot recognize the data properly and will generate a loud noise which could damage your speaker system.
- The player cannot play audio tracks in MP3PRO format.

### The playback order of MP3 audio tracks

The playback order of albums and tracks recorded on a DATA CD is as follows.

#### ◆Structure of disc contents

Tree 1 Tree 2 Tree 3 Tree 4 Tree 5



When you insert a DATA CD and press ▷, the numbered tracks are played sequentially, from ① through ⑦. Any sub-albums/tracks contained within a currently selected album take priority over the next album in the same tree. (Example: ① contains ② so ② is played before ③.)

When you press MENU and the list of MP3 albums appears (page 33), the albums are arranged in the following order: ① → ② → ③ → ④ → ⑤ → ⑥ → ⑦. Albums that do not contain tracks (such as album ⑥) do not appear in the list.

#### Hints

- If you add numbers (01, 02, 03, etc.) to the front of the track file names, the tracks will be played in that order.
- Since a disc with many trees takes longer to start playback, place your albums within the first two trees.

#### Notes

- Depending on the software you use to create the DATA CD, the playback order may differ from the illustration above.
- The playback order above may not be applicable if there are more than a total of 200 albums and tracks in the DATA CD.
- The player can recognize up to 100 albums (the player will count just albums, including albums that do not contain MP3 audio tracks). The player will not play any albums beyond the first 100 albums. Of the first 100 albums, the player will play no more than a combined total of 200 albums and tracks.

## Various Play Mode Functions (Program Play, Shuffle Play, Repeat Play, A-B Repeat Play)

You can set the following play modes:

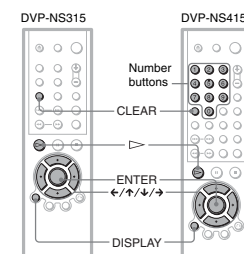
- Program Play (page 35)
- Shuffle Play (page 37)
- Repeat Play (page 38)
- A-B Repeat Play (page 39)

#### Note

The play mode is canceled when:  
– you open the disc tray.  
– the player enters standby mode by pressing I/O.

## Creating your own program (Program Play) DVD VCD ICD

You can play the contents of a disc in the order you want by arranging the order of the titles, chapters, or tracks on the disc to create your own program. You can program up to 99 titles, chapters, and tracks.

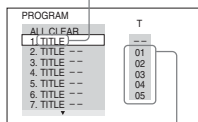


- 1 Press **DISPLAY** twice while the player is in stop mode. The following Control Bar appears.



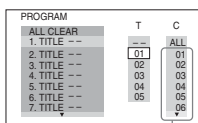
- 2 Press **←/→** to select **00%** (PROGRAM), then press **ENTER**.

"TRACK" is displayed when you play a VIDEO CD or CD.



Titles or tracks recorded on a disc

- 3 Press **→**. The cursor moves to the title or track row "T" (in this case, "01").



Chapters recorded on a disc

- 4 Select the title, chapter, or track you want to program.

◆ When playing a DVD

For example, select chapter "03" of title "02."

Press **↑/↓** to select "02" under "T," then press **ENTER**. You can also use the number buttons to select the number (DVP-NS415 only).

PROGRAM	T	C
ALL CLEAR	--	ALL
1. TITLE --	01	01
2. TITLE --	02	02
3. TITLE --	03	03
4. TITLE --	04	04
5. TITLE --	05	05
6. TITLE --	06	06
7. TITLE --	07	07

Next, press **↑/↓** to select "03" under "C," then press **ENTER**. You can also use the number buttons to select the number (DVP-NS415 only).

PROGRAM	T	C
ALL CLEAR	--	ALL
1. TITLE --	01	01
2. TITLE --	02	02
3. TITLE --	03	03
4. TITLE --	04	04
5. TITLE --	05	05
6. TITLE --	06	06
7. TITLE --	07	07

Selected title and chapter

◆ When playing a VIDEO CD or CD

For example, select track "02." Press **↑/↓** to select "02" under "T," then press **ENTER**.

PROGRAM	T	C
ALL CLEAR	--	ALL
1. TRACK --	01	01
2. TRACK --	02	02
3. TRACK --	03	03
4. TRACK --	04	04
5. TRACK --	05	05
6. TRACK --	06	06
7. TRACK --	07	07

Total time of the programmed tracks

- 5 To program other titles, chapters, or tracks, repeat Steps 3 to 4.

The programmed titles, chapters, and tracks are displayed in the selected order.

- 6 Press **▷** to start Program Play.

Program Play begins. When the program ends, you can restart the same program again by pressing **▷**.

To stop Program Play

Press **CLEAR**.

To turn off the display

Press **DISPLAY** repeatedly until the display is turned off.

To change or cancel a program

- 1 Follow Steps 1 and 2 of "Creating your own program (Program Play)."
- 2 Select the program number of the title, chapter, or track you want to change or cancel using **↑/↓**, and press **→**. You can also use the number buttons to select the number (DVP-NS415 only).
- 3 Follow Step 4 for new programming. To cancel a program, select "--" under "T," then press **ENTER**.

To cancel all the titles, chapters, or tracks in the programmed order

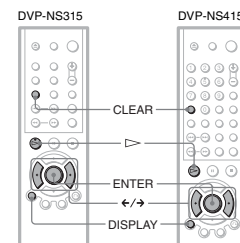
- 1 Follow Steps 1 and 2 of "Creating your own program (Program Play)."
- 2 Press **↑** and select "ALL CLEAR."
- 3 Press **ENTER**.

Hint

You can do Repeat Play or Shuffle Play of the programmed titles, chapters, or tracks. During Program Play, follow the steps of "Repeat Play" (page 38) or "Shuffle Play" (page 37).

Playing in random order (Shuffle Play) DVD VCD CD

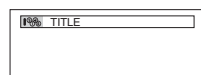
You can have the player "shuffle" titles, chapters, or tracks. Subsequent "shuffling" may produce a different playing order.



- 1 Press **DISPLAY** during playback. The following Control Bar appears.



- 2 Press **←/→** to select **00%** (SHUFFLE), then press **ENTER** repeatedly to select the item to be shuffled.



- ◆ When playing a DVD
  - TITLE
  - CHAPTER
- ◆ When playing a VIDEO CD or CD
  - TRACK
- ◆ When Program Play is activated
  - ON: shuffles titles, chapters, or tracks selected in Program Play.

To return to normal play

Press **CLEAR**, or select "OFF" in Step 2.

To stop the Control Bar

Press **DISPLAY** repeatedly until the Control Bar is turned off.

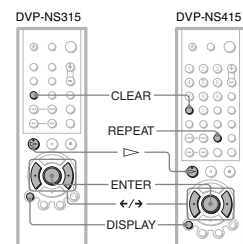
Hints

- You can set Shuffle Play while the player is stopped. After selecting the "SHUFFLE" option, press **▷**. Shuffle Play starts.
- Up to 200 chapters in a disc can be played in random order when "CHAPTER" is selected.

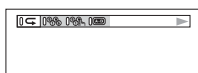
Playing repeatedly (Repeat Play) DVD VCD CD DATA-CD

You can play all of the titles or tracks on a disc or a single title, chapter, or track repeatedly.

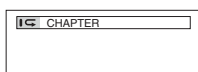
You can use a combination of Shuffle or Program Play modes.



- 1 Press **DISPLAY** during playback. The following Control Bar appears.



- 2 Press **←/→** to select **00%** (REPEAT), then press **ENTER** repeatedly to select the item to be repeated.



◆ When playing a DVD

- DISC: repeats all of the titles.
- TITLE: repeats the current title on a disc.
- CHAPTER: repeats the current chapter.

◆ When playing a VIDEO CD or CD

- DISC: repeats all of the tracks.
- TRACK: repeats the current track.

◆ When playing a DATA CD (MP3 audio)

- DISC: repeats all of the albums.
- ALBUM: repeats the current album.
- TRACK: repeats the current track.

◆ When Program Play or Shuffle Play is activated

- ON: repeats Program Play or Shuffle Play.

To return to normal play

Press **CLEAR**, or select "OFF" in Step 2.

To turn off the Control Bar

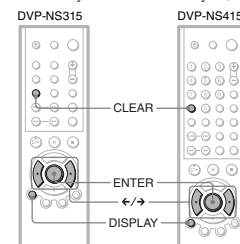
Press **DISPLAY** repeatedly until the Control Bar is turned off.

Hints

- You can set Repeat Play while the player is stopped. After selecting the "REPEAT" option, press **▷**. Repeat Play starts.
- You can select "REPEAT" directly by pressing **REPEAT** (DVP-NS415 only).

Repeating a specific portion (A-B Repeat Play) DVD VCD CD

You can play a specific portion of a title, chapter or track repeatedly. (This function is useful when you want to memorize lyrics, etc.)

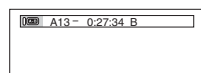


- 1 Press **DISPLAY** during playback. The following Control Bar appears.



- 2 Press **←/→** to select **00%** (A-B REPEAT).

- 3 During playback, when you find the starting point (point A) of the portion to be played repeatedly, press **ENTER**. The starting point (point A) is set.



- 4 When you reach the ending point (point B), press **ENTER** again. The set points are displayed and the player starts repeating this specific portion.

To return to normal play

Press **CLEAR**.

To turn off the Control Bar

Press **DISPLAY** repeatedly until the Control Bar is turned off.

Note

When you set A-B Repeat Play, the settings for Shuffle Play, Repeat Play, and Program Play are canceled.





- LFE (Low Frequency Effect) signal

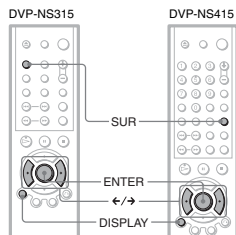
#### Note

If "DTS" is set to "OFF" in "AUDIO SETUP," the DTS track selection option will not appear on the screen even if the disc contains DTS tracks (page 62).

## TV Virtual Surround Settings (TVS) DVD

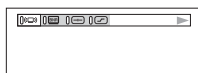
When you connect a stereo TV or 2 front speakers, TVS (TV Virtual Surround) lets you enjoy surround sound effects by using sound imaging to create virtual rear speakers from the sound of the front speakers (L: left, R: right) without using actual rear speakers. TVS was developed by Sony to produce surround sound for home use using just a stereo TV.

This function is designed to work with the LINE OUT L/R (AUDIO) jacks. Note that if you select one of the TVS settings, the player does not output Dolby Digital signals from the DIGITAL OUT (OPTICAL or COAXIAL) jack. (when you set "DOLBY DIGITAL" in "AUDIO SETUP" to "D-PCM") (page 62)



### 1 Press DISPLAY twice during playback.

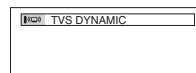
The following Control Bar appears.



### 2 Press <=> to select (SURROUND), then press ENTER repeatedly to select one of the TVS sounds.

Refer to the following explanations given for each item.

- TVS DYNAMIC
- TVS WIDE
- TVS NIGHT
- TVS STANDARD



#### To cancel the setting

Select "OFF" in Step 2.

#### To turn off the Control Bar

Press DISPLAY repeatedly until the Control Bar is turned off.

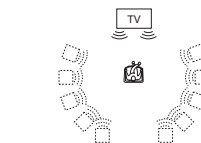
#### ◆TVS DYNAMIC

Creates virtual rear speakers from the sound of the front speakers (L, R) without using actual rear speakers (shown below). This mode is effective when the distance between the front L and R speakers is short, such as with built-in speakers on a stereo TV.



#### ◆TVS WIDE

Creates virtual rear speakers from the sound of the front speakers (L, R) without using actual rear speakers. The virtual speakers are reproduced as shown in the illustration below. This mode is effective when the distance between the front L and R speakers is short, such as with built-in speakers on a stereo TV.

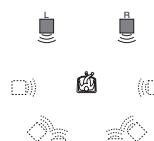


#### ◆TVS NIGHT

Large sounds, such as explosions, are suppressed, but the quieter sounds are unaffected. This feature is useful when you want to hear the dialog and enjoy the surround sound effects of "TVS WIDE" at low volume.

#### ◆TVS STANDARD

Creates virtual rear speakers from the sound of the front speakers (L, R) without using actual rear speakers. The virtual speakers are reproduced as shown in the illustration below. Use this setting when you want to use TVS with 2 separate speakers.



L: Front speaker (left)  
R: Front speaker (right)  
□: Virtual speaker

#### Hint

You can also change the setting by pressing SUR (or SURROUND on the player) repeatedly.

#### Notes

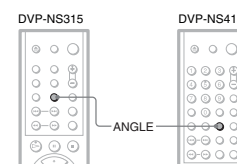
- When the playing signal does not contain a signal for the rear speakers, the surround effects will be difficult to hear.
- When you select one of the TVS modes, turn off the surround setting of the connected TV or amplifier (receiver).
- Make sure that your listening position is between and at an equal distance from your speakers, and that the speakers are located in similar surroundings.

- "TVS NIGHT" only works with Dolby Digital discs. However, not all discs will respond to the "TVS NIGHT" function in the same way.
- If you use the DIGITAL OUT (OPTICAL or COAXIAL) jack and set "DOLBY DIGITAL" to "DOLBY DIGITAL" or "DTS" to "ON" in "AUDIO SETUP," sound will come from your speakers but it will not have the TVS effect.

## Enjoying Movies

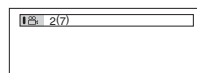
### Changing the Angles DVD

If various angles (multi-angles) for a scene are recorded on the DVD, "ANGLE" appears in the front panel display. This means that you can change the viewing angle.



### 1 Press ANGLE during playback.

The number of the angle appears on the display. The number in parentheses indicates the total number of angles.



### 2 Press ANGLE repeatedly to select the angle number.

The scene changes to the selected angle.

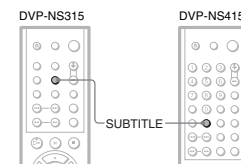
#### Note

Depending on the DVD, you may not be able to change the angles even if multi-angles are recorded on the DVD.

## Displaying the Subtitles

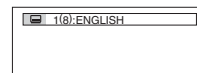
### DVD

If subtitles are recorded on the discs, you can change the subtitles or turn them on and off whenever you want while playing a DVD.



### 1 Press SUBTITLE during playback.

The following display appears. The number in parentheses indicates the total number of available subtitles.



### 2 Press SUBTITLE repeatedly to select the language.

Depending on the DVD, the choice of language varies. When 4 digits are displayed, they indicate a language code. Refer to "Language Code List" on page 68 to see which language the code represents.

#### To turn off the subtitles

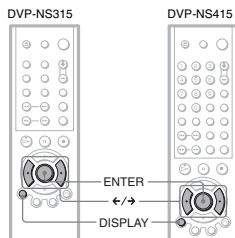
Select "OFF" in Step 2.

#### Note

Depending on the DVD, you may not be able to change the subtitles even if multilingual subtitles are recorded on it. You also may not be able to turn them off.

## Adjusting the Picture Quality (BNR) DVD VCD

The Block Noise Reduction (BNR) function adjusts the picture quality by reducing the "block noise" or mosaic like patterns that appear on your TV screen.

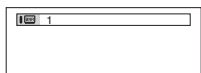


### 1 Press DISPLAY twice during playback.

The following Control Bar appears.



### 2 Press ←/→ to select (BNR), then press ENTER repeatedly to select a level.



- 1: reduces the "block noise."
- 2: reduces the "block noise" more than 1.
- 3: reduces the "block noise" more than 2.

### To cancel the "BNR" setting

Select "OFF" in Step 2.

### To turn off the Control Bar

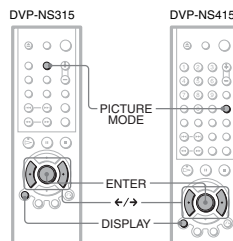
Press DISPLAY repeatedly until the Control Bar is turned off.

### Notes

- If the outlines of the images on your screen should become blurred, set "BNR" to "OFF."
- Depending on the disc or the scene being played, the "BNR" effect may be hard to discern.

## Adjusting the Playback Picture (CUSTOM PICTURE MODE) DVD VCD

You can adjust the video signal of the DVD or VIDEO CD from the player to obtain the picture quality you want. Choose the setting that best suits the program you are watching.



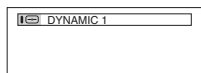
### 1 Press DISPLAY twice during playback.

The following Control Bar appears.



### 2 Press ←/→ to select (CUSTOM PICTURE MODE), then press ENTER repeatedly to select the setting you want.

The default setting is underlined.



- STANDARD: displays a standard picture.

- DYNAMIC 1: produces a bold dynamic picture by increasing the picture contrast and the color intensity.
- DYNAMIC 2: produces a more dynamic picture than DYNAMIC 1 by further increasing the picture contrast and the color intensity.
- CINEMA 1: enhances details in dark areas by increasing the black level.
- CINEMA 2: White colors become brighter and black colors become richer, and the color contrast is increased.

### To turn off the Control Bar

Press DISPLAY repeatedly until the Control Bar is turned off.

### Hints

- When you watch a movie, "CINEMA 1" or "CINEMA 2" is recommended.
- You can also select the "CUSTOM PICTURE MODE" setting by pressing PICTURE MODE repeatedly.

Enjoying Movies

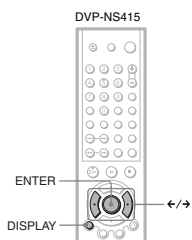
48

49

## Enhancing the Playback Picture (DIGITAL VIDEO ENHANCER) (DVP-NS415 only) DVD VCD

ENHANCER) (DVP-NS415 only) DVD VCD

The Digital Video Enhancer (DVE) function makes the picture appear clear and crisp by enhancing the outlines of images on your TV screen. Also, this function can soften the images on the screen.

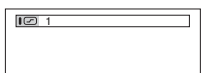


### 1 Press DISPLAY twice during playback.

The following Control Bar appears.



### 2 Press ←/→ to select (DIGITAL VIDEO ENHANCER), then press ENTER repeatedly to select a level.



- 1: enhances the outline.
- 2: enhances the outline more than 1.

- 3: enhances the outline more than 2.
- SOFT: softens the image (DVD only).

### To cancel the "DIGITAL VIDEO ENHANCER" setting

Select "OFF" in Step 2.

### To turn off the Control Bar

Press DISPLAY repeatedly until the Control Bar is turned off.

### Note

Depending on the disc or the scene being played, noise found in the disc may become more apparent. If this happens, it is recommended that you use the BNR function (page 48) with the DVE function. If the condition still does not improve, reduce the Digital Video Enhancer level, or select "SOFT" (DVD only) in Step 2 above.

## Using Various Additional Functions

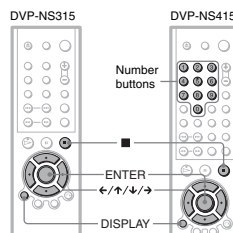
### Locking Discs (CUSTOM PARENTAL CONTROL)

You can set two kinds of playback restrictions for the desired disc.

- Custom Parental Control  
You can set playback restrictions so that the player will not play inappropriate discs.
- Parental Control  
Playback of some DVDs can be limited according to a predetermined level such as the age of the users. Scenes may be blocked or replaced with different scenes. The same password is used for both Parental Control and Custom Parental Control.

### Custom Parental Control DVD VCD

You can set the same Custom Parental Control password for up to 40 discs. When you set the 41st-disc, the first disc is canceled.

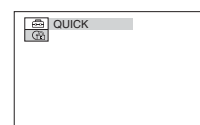


### 1 Insert the disc you want to lock.

If the disc is playing, press to stop playback.

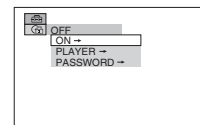
### 2 Press DISPLAY while the player is in stop mode.

The following Control Bar appears.



### 3 Press ↑/↓ to select (CUSTOM PARENTAL CONTROL), then press ENTER.

The options for "PARENTAL CONTROL" appear.



### 4 Press ↑/↓ to select "ON →," then press ENTER.

◆ If you have not entered a password  
The display for registering a new password appears.



Enter a 4-digit password by pressing ↑/↓ to select the digit, followed by ←/→ to move the cursor, then press ENTER. You can also use the number buttons to enter your password (DVP-NS415 only). The display for confirming the password appears.

◆ When you have already registered a password  
The display for entering the password appears.

Using Various Additional Functions

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→ continued 51





- 5 Enter or re-enter your 4-digit password by pressing  $\uparrow/\downarrow$  to select the digit, followed by  $\leftarrow/\rightarrow$  to move the cursor, then press ENTER.**

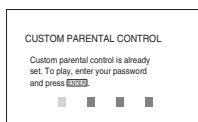
You can also use the number buttons to enter your password (DVP-NS415 only). "Custom parental control is set." appears when you enter your password.

#### To turn off the Custom Parental Control function

- Follow Steps 1 through 3 of "Custom Parental Control."
- Press  $\uparrow/\downarrow$  to select "OFF  $\rightarrow$ ," then press ENTER.
- Enter your 4-digit password using  $\uparrow/\downarrow$  to select the digit, followed by  $\leftarrow/\rightarrow$  to move the cursor, then press ENTER. You can also use the number buttons to enter your password (DVP-NS415 only).

#### To play a disc for which Custom Parental Control is set

- Insert the disc for which Custom Parental Control is set. The "CUSTOM PARENTAL CONTROL" display appears.



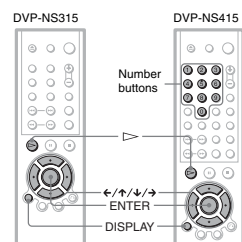
- Enter your 4-digit password using  $\uparrow/\downarrow$  to select the digit, followed by  $\leftarrow/\rightarrow$  to move the cursor, then press ENTER. You can also use the number buttons to enter your password (DVP-NS415 only). The player is ready for playback.

#### Hint

If you forget your password, enter the 6-digit number "199703" using  $\uparrow/\downarrow$  to select the digit, followed by  $\leftarrow/\rightarrow$  to move the cursor when the "CUSTOM PARENTAL CONTROL" display asks you for your password, then press ENTER. (Press  $\rightarrow$  after the 4th digit to allow the entire 6-digit number to be entered.) The display will ask you to enter a new 4-digit password. You can also use the number buttons to enter the digits (DVP-NS415 only).

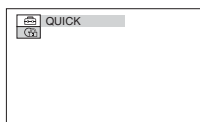
### Parental Control (limiting playback by children) DVD

Playback of some DVDs can be limited according to a predetermined level such as the age of the users. The "PARENTAL CONTROL" function allows you to set a playback limitation level.



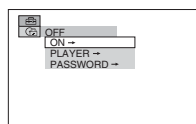
- Press DISPLAY while the player is in stop mode.

The following Control Bar appears.



- Press  $\uparrow/\downarrow$  to select  $\text{PG}$  (PARENTAL CONTROL), then press ENTER.

The options for "PARENTAL CONTROL" appear.



- Press  $\uparrow/\downarrow$  to select "PLAYER  $\rightarrow$ ," then press ENTER.

◆ If you have not entered a password  
The display for registering a new password appears.



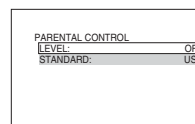
Enter a 4-digit password using  $\uparrow/\downarrow$  to select the digit, followed by  $\leftarrow/\rightarrow$  to move the cursor, then press ENTER. You can also use the number buttons to enter your password (DVP-NS415 only). The display for confirming the password appears.

◆ When you have already registered a password  
The display for entering the password appears.



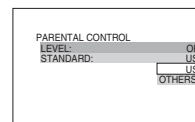
- Enter or re-enter your 4-digit password by pressing  $\uparrow/\downarrow$  to select the digit, followed by  $\leftarrow/\rightarrow$  to move the cursor, then press ENTER.

You can also use the number buttons to enter your password (DVP-NS415 only). The display for setting the playback limitation level appears.



- Press  $\uparrow/\downarrow$  to select "STANDARD," then press ENTER.

The selection items for "STANDARD" are displayed.

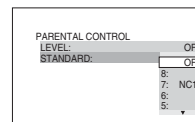


- Press  $\uparrow/\downarrow$  to select a geographic area as the playback limitation level, then press ENTER.

The area is selected. When you select "OTHERS  $\rightarrow$ ," select and enter a standard code in the table on page 54. You can also use the number buttons to enter your password (DVP-NS415 only).

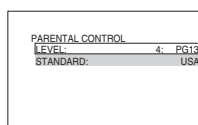
- Press  $\uparrow/\downarrow$  to select "LEVEL," then press ENTER.

The selection items for "LEVEL" are displayed.



- Select the level you want using  $\uparrow/\downarrow$ , then press ENTER.

Parental Control setting is complete.



The lower the value, the stricter the limitation.

#### To turn off the Parental Control function

Set "LEVEL" to "OFF" in Step 8.

#### To play a disc for which Parental Control is set

- Insert the disc and press  $\triangleright$ . The display for entering your password appears.
- Enter your 4-digit password using  $\uparrow/\downarrow$  to select the digit, followed by  $\leftarrow/\rightarrow$  to move the cursor, then press ENTER. You can also use the number buttons to enter your password (DVP-NS415 only). The player starts playback.

#### Hint

If you forget your password, remove the disc and repeat Steps 1 to 3 of "Parental Control (limiting playback by children)." When you are asked to enter your password, enter "199703" using  $\uparrow/\downarrow$  to select the digit, followed by  $\leftarrow/\rightarrow$  to move the cursor, then press ENTER. (Press  $\rightarrow$  after the 4th digit to allow the entire 6-digit number to be entered.) The display will ask you to enter a new 4-digit password. After you enter a new 4-digit password in Step 4, replace the disc in the player and press  $\triangleright$ . When the display for entering your password appears, enter your new password. You can also use the number buttons to enter the digits (DVP-NS415 only).

#### Note

When you play DVDs which do not have the Parental Control function, playback cannot be limited on this player.

#### Area Code

Standard	Code number	Standard	Code number
Argentina	2044	Korea	2304
Australia	2047	Malaysia	2363
Austria	2046	Mexico	2362
Belgium	2057	Netherlands	2376
Brazil	2070	New Zealand	2390
Canada	2079	Norway	2379
Chile	2090	Pakistan	2427
China	2092	Philippines	2424
Denmark	2115	Portugal	2436
Finland	2165	Russia	2489
France	2174	Singapore	2501
Germany	2109	Spain	2149
India	2248	Sweden	2499
Indonesia	2238	Switzerland	2086
Italy	2254	Thailand	2528
Japan	2276	United Kingdom	2184

### Changing the password

- Press DISPLAY while the player is in stop mode.

The Control Bar appears.

- Press  $\uparrow/\downarrow$  to select  $\text{PG}$  (PARENTAL CONTROL), then press ENTER.

The options for "PARENTAL CONTROL" appear.

- Press  $\uparrow/\downarrow$  to select "PASSWORD  $\rightarrow$ ," then press ENTER.

The display for entering the password appears.

- Enter your 4-digit password using  $\uparrow/\downarrow$  to select the digit, followed by  $\leftarrow/\rightarrow$  to move the cursor, then press ENTER. You can also use the number buttons to enter your password (DVP-NS415 only).

- Enter a new 4-digit password using  $\uparrow/\downarrow$  to select the digit, followed by  $\leftarrow/\rightarrow$  to move the cursor, then press ENTER.

You can also use the number buttons to enter your password (DVP-NS415 only).

- To confirm your password, re-enter it using  $\uparrow/\downarrow$  to select the digit, followed by  $\leftarrow/\rightarrow$  to move the cursor, then press ENTER.

You can also use the number buttons to enter your password (DVP-NS415 only).

#### If you make a mistake entering your password

Press  $\leftarrow$  before you press ENTER and input the correct number.

#### If you make a mistake

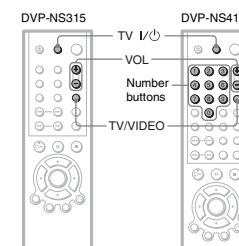
Press  $\rightarrow$  RETURN.

#### To turn off the display

Press DISPLAY repeatedly until the display is turned off.

## Controlling Your TV with the Supplied Remote

You can control the sound level, input source, and power switch of your Sony TV with the supplied remote.



You can control your TV using the buttons below.

By pressing	You can
TV I/O	Turn the TV on or off
VOL +/-	Adjust the volume of the TV
TV/VIDEO	Switch the TV's input source between the TV and other input sources

#### Note

Depending on the unit being connected, you may not be able to control your TV using some of the buttons.

## Controlling other TVs with the remote (DVP-NS415 only)

You can control the sound level, input source, and power switch of non-Sony TVs as well. If your TV is listed in the table below, set the appropriate manufacturer's code.

**1** While holding down TV I/⏻, press the number buttons to select your TV's manufacturer's code (see the table below).

**2** Release TV I/⏻.

### Code numbers of controllable TVs

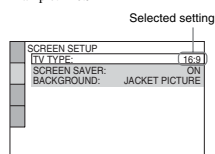
Manufacturer	Code number
Sony (default)	01
JVC	09
Panasonic	19
Philips	21
RCA	10
Samsung	20
Sanyo	11
Sharp	18
Toshiba	07
Zenith	15

### Notes

- If you enter a new code number, the code number previously entered will be erased.
- When you replace the batteries of the remote, the code number you have set may be reset to the default setting. Set the appropriate code number again.

**6** Select a setting using ↑/↓, then press ENTER.

The setting is selected and setup is complete.  
Example: "16:9"



### To turn off the display

Press DISPLAY repeatedly until the display is turned off.

### To enter the Quick Setup mode

Select "QUICK" in Step 3. Follow from Step 5 of the Quick Setup explanation to make basic adjustments (page 25).

### To reset all of the "SETUP" settings

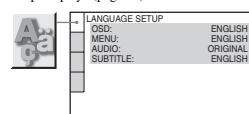
If you select "RESET" in Step 3, you can reset all of the "SETUP" settings on pages 58 to 62 to the default settings. After you select "RESET" and press ENTER, select "YES" and press ENTER to reset the settings (it takes a few seconds to complete), or select "NO" and press ENTER to return to the Control Bar. Do not press I/⏻ when resetting the player.

## Setting the Display or Sound Track Language

### (LANGUAGE SETUP)

"LANGUAGE SETUP" allows you to set various languages for the on-screen display or sound track.

Select "LANGUAGE SETUP" in the Setup Display. To use the display, see "Using the Setup Display" (page 57).



#### ◆ OSD (On-Screen Display)

Switches the display language on the screen.

#### ◆ MENU (DVD only)

You can select the desired language for the disc's menu.

#### ◆ AUDIO (DVD only)

Switches the language of the sound track. When you select "ORIGINAL," the language given priority in the disc is selected.

#### ◆ SUBTITLE (DVD only)

Switches the language of the subtitle recorded on the DVD. When you select "AUDIO FOLLOW," the language for the subtitles changes according to the language you selected for the sound track.

#### Hint

If you select "OTHERS →" in "MENU," "SUBTITLE," and "AUDIO," select and enter a language code from "Language Code List" on page 68 using ↑/↓ to select the digit, followed by ←/→ to move the cursor. You can also use the number buttons to enter the digits (DVP-NS415 only).

#### Note

When you select a language in "MENU," "SUBTITLE," or "AUDIO" that is not recorded on the DVD, one of the recorded languages will be automatically selected.

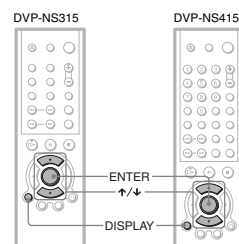
## Settings and Adjustments

## Using the Setup Display

By using the Setup Display, you can make various adjustments to items such as picture and sound. You can also set a language for the subtitles and the Setup Display, among other things. For details on each Setup Display item, see pages from 58 to 62.

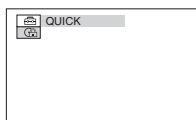
### Note

Playback settings stored in the disc take priority over the Setup Display settings and not all the functions described may work.



**1** Press DISPLAY when the player is in stop mode.

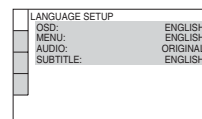
The Control Bar appears.



**2** Press ↑/↓ to select (SETUP), then press ENTER.

**3** Press ↑/↓ to select "CUSTOM," then press ENTER.

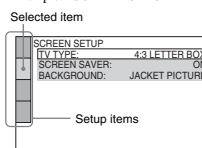
The Setup Display appears.



**4** Press ↑/↓ to select the setup item from the displayed list:

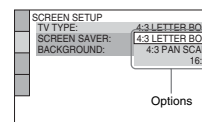
"LANGUAGE SETUP," "SCREEN SETUP," "CUSTOM SETUP," or "AUDIO SETUP." Then press ENTER.

The Setup item is selected.  
Example: "SCREEN SETUP"



**5** Select an item using ↑/↓, then press ENTER.

The options for the selected item appear.  
Example: "TV TYPE"

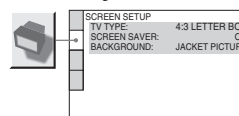


## Settings for the Display

### (SCREEN SETUP)

Choose settings according to the TV to be connected.

Select "SCREEN SETUP" in the Setup Display. To use the display, see "Using the Setup Display" (page 57). The default settings are underlined.



#### ◆ TV TYPE

Selects the aspect ratio of the connected TV (4:3 standard or wide).

4:3 LETTER BOX	Select this when you connect a 4:3 screen TV. Displays a wide picture with bands on the upper and lower portions of the screen.
4:3 PAN SCAN	Select this when you connect a 4:3 screen TV. Automatically displays the wide picture on the entire screen and cuts off the portions that do not fit.
16:9	Select this when you connect a wide-screen TV or a TV with a wide mode function.

4:3 LETTER BOX



4:3 PAN SCAN



16:9



### Note

Depending on the DVD, "4:3 LETTER BOX" may be selected automatically instead of "4:3 PAN SCAN" or vice versa.

#### ◆ SCREEN SAVER

The screen saver image appears when you leave the player in pause or stop mode for 15 minutes, or when you play back a CD or DATA CD (MP3 audio) for more than 15 minutes. The screen saver will help prevent your display device from becoming damaged (ghosting). Press ▷ to turn off the screen saver.

ON	Turns on the screen saver.
OFF	Turns off the screen saver.

#### ◆ BACKGROUND


Selects the background color or picture on the TV screen in stop mode or while playing a CD or DATA CD (MP3 audio).

JACKET PICTURE	The jacket picture (still picture) appears, but only when the jacket picture is already recorded on the disc (CD-EXTRA, etc.). If the disc does not contain a jacket picture, the "GRAPHICS" picture appears.
GRAPHICS	A preset picture stored in the player appears.
BLUE	The background color is blue.
BLACK	The background color is black.

## Custom Settings (CUSTOM SETUP)

Use this to set up playback related and other settings.

Select "CUSTOM SETUP" in the Setup Display. To use the display, see "Using the Setup Display" (page 57). The default settings are underlined.

	CUSTOM SETUP	
	AUTO POWER OFF:	OFF
	AUTO PLAY:	OFF
	DIMMER:	BRIGHT
	PAUSE MODE:	AUTO
	TRACK SELECTION:	OFF
	MULTI-DISC RESUME:	ON

### ◆ AUTO POWER OFF

Switches the Auto Power Off setting on or off.

<u>OFF</u>	Switches this function off.
ON	The player enters standby mode when left in stop mode for more than 30 minutes.

### ◆ AUTO PLAY

Switches the Auto Play setting on or off. This function is useful when the player is connected to a timer (not supplied).

<u>OFF</u>	Switches this function off.
ON	Automatically starts playback when the player is turned on.

### ◆ DIMMER

Adjusts the lighting of the front panel display.

BRIGHT	Makes the lighting bright.
DARK	Makes the lighting dark.
<u>OFF</u>	Turns off the lighting.

### ◆ PAUSE MODE (DVD only)

Selects the picture in pause mode.

<u>AUTO</u>	The picture, including subjects that move dynamically, is output with no jitter. Normally select this position.
FRAME	The picture, including subjects that do not move dynamically, is output in high resolution.

### ◆ TRACK SELECTION (DVD only)

Gives the sound track which contains the highest number of channels priority when you play a DVD on which multiple audio formats (PCM, DTS, or Dolby Digital format) are recorded.

<u>OFF</u>	No priority given.
AUTO	Priority given.

### Notes

- When you set the item to "AUTO," the language may change. The "TRACK SELECTION" setting has higher priority than the "AUDIO" settings in "LANGUAGE SETUP" (page 58).
- If you set "DTS" to "OFF" (page 62), the DTS sound track is not played even if you set "TRACK SELECTION" to "AUTO."
- If PCM, DTS, and Dolby Digital sound tracks have the same number of channels, the player selects PCM, DTS, and Dolby Digital sound tracks in this order.

### ◆ MULTI-DISC RESUME (DVP-NS415 only) (DVD/VIDEO CD only)


Switches the Multi-disc Resume setting on or off. Resume playback can be stored in memory for up to 6 different DVD/VIDEO CD discs (page 31).

<u>ON</u>	Stores the resume settings in memory for up to six discs (The settings remain in memory even if you select OFF.)
OFF	Does not store the resume settings in memory. Playback restarts at the resume point only for the current disc in the player.

## Setting the digital output signal

Switches the method of outputting audio signals when you connect a component such as an amplifier (receiver) or MD deck with a digital input jack.

For connection details, see page 20. Select "DOLBY DIGITAL" and "DTS" after setting "DIGITAL OUT" to "ON."

	AUDIO SETUP	
	AUDIO ATT:	OFF
	AUDIO DRC:	STANDARD
	DOWNMIX:	DOLBY SURROUND
	DIGITAL OUT:	ON
	DOLBY DIGITAL:	D-PCM
	DTS:	OFF

If you connect a component that does not conform to the selected audio signal, a loud noise (or no sound) will come out from the speakers, affecting your ears or causing the speakers to be damaged.

### ◆ DOLBY DIGITAL (DVD only)


Selects the type of Dolby Digital signal.

D-PCM	Select this when the player is connected to an audio component lacking a built-in Dolby Digital decoder. You can select whether the signals conform to Dolby Surround (Pro Logic) or not by making adjustments to the "DOWNMIX" item in "AUDIO SETUP" (page 61).
<u>DOLBY DIGITAL</u>	Select this when the player is connected to an audio component with a built-in Dolby Digital decoder.

## Settings for the Sound (AUDIO SETUP)

"AUDIO SETUP" allows you to set the sound according to the playback and connection conditions.

Select "AUDIO SETUP" in the Setup Display. To use the display, see "Using the Setup Display" (page 57). The default settings are underlined.

	AUDIO SETUP	
	AUDIO ATT:	OFF
	AUDIO DRC:	STANDARD
	DOWNMIX:	DOLBY SURROUND
	DIGITAL OUT:	ON
	DOLBY DIGITAL:	D-PCM
	DTS:	OFF

### ◆ AUDIO ATT (attenuation)

If the playback sound is distorted, set this item to "ON." The player reduces the audio output level.

This function affects the output of the LINE OUT L/R (AUDIO) jacks.

<u>OFF</u>	Normally, select this position.
ON	Select this when the playback sound from the speakers is distorted.

### ◆ AUDIO DRC (Dynamic Range Control) (DVD only)

Makes the sound clear when the volume is turned down when playing a DVD that conforms to "AUDIO DRC." This affects the output from the following jacks:

- LINE OUT L/R (AUDIO) jacks
- DIGITAL OUT (OPTICAL or COAXIAL) jack only when "DOLBY DIGITAL" is set to "D-PCM" (page 62).

<u>STANDARD</u>	Normally select this position.
TV MODE	Makes the low sounds clear even if you turn the volume down.
WIDE RANGE	Gives you the feeling of being at a live performance.

### ◆ DOWNMIX (DVD only)

Switches the method for mixing down to 2 channels when you play a DVD which has rear sound elements (channels) or is recorded in Dolby Digital format. For details on the rear signal components, see "Checking the audio signal format" (page 43). This function affects the output of the following jacks:

- LINE OUT L/R (AUDIO) jacks
- DIGITAL OUT (OPTICAL or COAXIAL) jack when "DOLBY DIGITAL" is set to "D-PCM" (page 62).

<u>DOLBY SURROUND</u>	Select this when the player is connected to an audio component that conforms to Dolby Surround (Pro Logic).
<u>NORMAL</u>	Select this when the player is connected to an audio component that does not conform to Dolby Surround (Pro Logic).

### ◆ DIGITAL OUT

Selects if audio signals are output via the DIGITAL OUT (OPTICAL or COAXIAL) jack.

<u>ON</u>	Normally select this position. When you select "ON," see "Setting the digital output signal" for further settings.
OFF	The influence of the digital circuit upon the analog circuit is minimal.

## Additional Information

## Troubleshooting

If you experience any of the following difficulties while using the player, use this troubleshooting guide to help remedy the problem before requesting repairs. Should any problem persist, consult your nearest Sony dealer.

### Power

The power is not turned on.

- Check that the AC power cord is connected securely.

### Picture

There is no picture/picture noise appears.

- Re-connect the connecting cord securely.
- The connecting cords are damaged.
- Check the connection to your TV (page 18) and switch the input selector on your TV so that the signal from the player appears on the TV screen.
- The disc is dirty or flawed.
- If the picture output from your player goes through your VCR to get to your TV or if you are connected to a combination TV/VIDEO player, the copy-protection signal applied to some DVD programs could affect picture quality. If you still experience problems even when you connect your player directly to your TV, please try connecting your player to your TV's S VIDEO input (page 18).

Even though you set the aspect ratio in "TV TYPE" or "SCREEN SETUP," the picture does not fill the screen.

- The aspect ratio of the disc is fixed on your DVD.

There is no picture from your VCR connected to the LINE IN jacks.

- The DVD player must be in standby mode to view pictures from your VCR.

## Sound

There is no sound.

- Re-connect the connecting cord securely.
- The connecting cord is damaged.
- The player is connected to the wrong input jack on the amplifier (receiver) (page 22, 23, 24).
- The amplifier (receiver) input is not correctly set.
- The player is in pause mode or in Slow-motion Play mode.
- The player is in fast forward or fast reverse mode.
- If the audio signal does not come through the DIGITAL OUT (OPTICAL or COAXIAL) jack, check the audio settings (page 61).

Sound is noisy.

- When playing a CD with DTS sound tracks, noise will come from the LINE OUT L/R (AUDIO) jacks (page 27) or DIGITAL OUT (OPTICAL or COAXIAL) jack.

Sound distortion occurs.

- Set "AUDIO ATT" in "AUDIO SETUP" to "ON" (page 61).

The sound volume is low.

- The sound volume is low on some DVDs. The sound volume may improve if you set "AUDIO DRC" to "TV MODE" (page 61).
- Set "AUDIO ATT" in "AUDIO SETUP" to "OFF" (page 61).

## Operation

The remote does not function.

- There are obstacles between the remote and the player.
- The distance between the remote and the player is too far.
- The remote is not pointed at the remote sensor on the player.
- The batteries in the remote are weak.

The disc does not play.

- The disc is turned over.
- Insert the disc with the playback side facing down on the disc tray.
- The disc is skewed.
- The player cannot play certain discs (page 6).
- The region code on the DVD does not match

- the player.
- ➔ Moisture has condensed inside the player (page 3).
  - ➔ The player cannot play CD-Rs, CD-RWs, DVD-Rs, or DVD-RWs (video mode) that are not finalized (page 6).

#### The MP3 audio track cannot be played (page 34).

- ➔ The DATA CD is not recorded in the MP3 format that conforms to ISO9660 Level 1/Level 2 or Joliet.
- ➔ The MP3 audio track does not have the extension ".MP3."
- ➔ The data is not formatted in MP3 even though it has the extension ".MP3."
- ➔ The data is not MPEG1 Audio Layer 3 data.
- ➔ The player cannot play audio tracks in MP3PRO format.

#### The title of the MP3 audio album or track is not correctly displayed.

- ➔ The player can only display numbers and alphabet. Other characters are displayed as asterisks.

#### The disc does not start playing from the beginning.

- ➔ Program Play, Shuffle Play, Repeat Play, or A-B Repeat Play has been selected (page 35).
- ➔ Resume play has taken effect (page 31).

#### The player starts playing the disc automatically.

- ➔ The disc features an auto playback function.
- ➔ "AUTO PLAY" in "CUSTOM SETUP" is set to "ON" (page 60).

#### Playback stops automatically.

- ➔ While playing discs with an auto pause signal, the player stops playback at the auto pause signal.

#### You cannot perform some functions such as Stop, Search, Slow-motion Play, Repeat Play, Shuffle Play, or Program Play.

- ➔ Depending on the disc, you may not be able to do some of the operations above. See the operating manual that comes with the disc.

#### The language for the sound track cannot be changed.

- ➔ Try using the DVD's menu instead of the direct selection button on the remote (page 32).
- ➔ Multilingual tracks are not recorded on the DVD being played.
- ➔ The DVD prohibits the changing of the language for the sound track.

#### The subtitle language cannot be changed or turned off.

- ➔ Try using the DVD's menu instead of the direct selection button on the remote (page 32).
- ➔ Multilingual subtitles are not recorded on the DVD being played.
- ➔ The DVD prohibits the changing of the subtitles.

#### The angles cannot be changed.

- ➔ Try using the DVD's menu instead of the direct selection button on the remote (page 32).
- ➔ Multi-angles are not recorded on the DVD being played.
- ➔ The angle can only be changed when the "PAUSE" indicator lights up on the front panel display (page 9).
- ➔ The DVD prohibits changing of the angles.

#### The player does not operate properly.

- ➔ When static electricity, etc., causes the player to operate abnormally, unplug the player.

#### Nothing is displayed on the front panel display.

- ➔ "DIMMER" in "CUSTOM SETUP" is set to "OFF." Set "DIMMER" to "BRIGHT" or "DARK" (page 60).

#### 5 numbers or letters are displayed on the screen and on the front panel display.

- ➔ The self-diagnosis function was activated. (See the table on page 65.)

#### The disc tray does not open and "LOCKED" appears on the front panel display.

- ➔ Child Lock is set (page 28).

#### The disc tray does not open and "TRAY LOCKED" appears on the front panel display.

- ➔ Contact your Sony dealer or local authorized Sony service facility.

#### "Data error" appears on the TV screen when playing a DATA CD.

- ➔ The MP3 audio track you want to play is broken.
- ➔ The data is not MPEG 1 Audio Layer 3 data.

## Self-diagnosis Function

### (When letters/numbers appear in the display)

When the self-diagnosis function is activated to prevent the player from malfunctioning, a five-character service number (e.g., C 13 50) with a combination of a letter and four digits appears on the screen and the front panel display. In this case, check the following table.



First three characters of the service number	Cause and/or corrective action
C 13	The disc is dirty. ➔ Clean the disc with a soft cloth (page 7).
C 31	The disc is not inserted correctly. ➔ Re-insert the disc correctly.
E XX (xx is a number)	To prevent a malfunction, the player has performed the self-diagnosis function. ➔ Contact your nearest Sony dealer or local authorized Sony service facility and give the 5-character service number. Example: E 61 10

Additional Information

## Glossary

### Chapter (page 9)

Sections of a picture or a music feature that are smaller than titles. A title is composed of several chapters. Depending on the disc, no chapters may be recorded.

### Dolby Digital (page 24, 62)

Digital audio compression technology developed by Dolby Laboratories. This technology conforms to 5.1-channel surround sound. The rear channel is stereo and there is a discrete subwoofer channel in this format. Dolby Digital provides the same 5.1 discrete channels of high quality digital audio found in Dolby Digital cinema audio systems. Good channel separation is realized because all of the channel data are recorded discretely and little deterioration is realized because all channel data processing is digital.

### Dolby Surround (Pro Logic) (page 23)

Audio signal processing technology that Dolby Laboratories developed for surround sound. When the input signal contains a surround component, the Pro Logic process outputs the front, center and rear signals. The rear channel is monaural.

### DTS (page 24, 62)

Digital audio compression technology that Digital Theater Systems, Inc. developed. This technology conforms to 5.1-channel surround sound. The rear channel is stereo and there is a discrete subwoofer channel in this format. DTS provides the same 5.1 discrete channels of high quality digital audio. Good channel separation is realized because all of the channel data is recorded discretely and little deterioration is realized because all channel data processing is digital.

### DVD (page 6)

A disc that contains up to 8 hours of moving pictures even though its diameter is the same as a CD.

The data capacity of a single-layer and single-sided DVD is 4.7 GB (Giga Byte), which is 7 times that of a CD. The data capacity of a double-layer and single-sided DVD is 8.5

GB, a single-layer and double-sided DVD is 9.4 GB, and double-layer and double-sided DVD is 17GB.

The picture data uses the MPEG 2 format, one of the worldwide standards of digital compression technology. The picture data is compressed to about 1/40 (average) of its original size. The DVD also uses a variable rate coding technology that changes the data to be allocated according to the status of the picture. Audio information is recorded in a multi-channel format, such as Dolby Digital, allowing you to enjoy a more real audio presence.

Furthermore, various advanced functions such as the multi-angle, multilingual, and Parental Control functions are provided with the DVD.

### Index (CD)/Video Index (VIDEO CD) (page 9)

A number that divides a track into sections to easily locate the point you want on a CD or VIDEO CD. Depending on the disc, no index may be recorded.

### Scene (page 9)

On a VIDEO CD with PBC (playback control) functions, the menu screens, moving pictures and still pictures are divided into sections called "scenes."

### Title (page 9)

The longest section of a picture or music feature on a DVD, movie, etc., in video software, or the entire album in audio software.

### Track (page 9)

Sections of a picture or a music feature on a CD or VIDEO CD (the length of a song).

## Language Code List

For details, see pages 43, 47, 58.

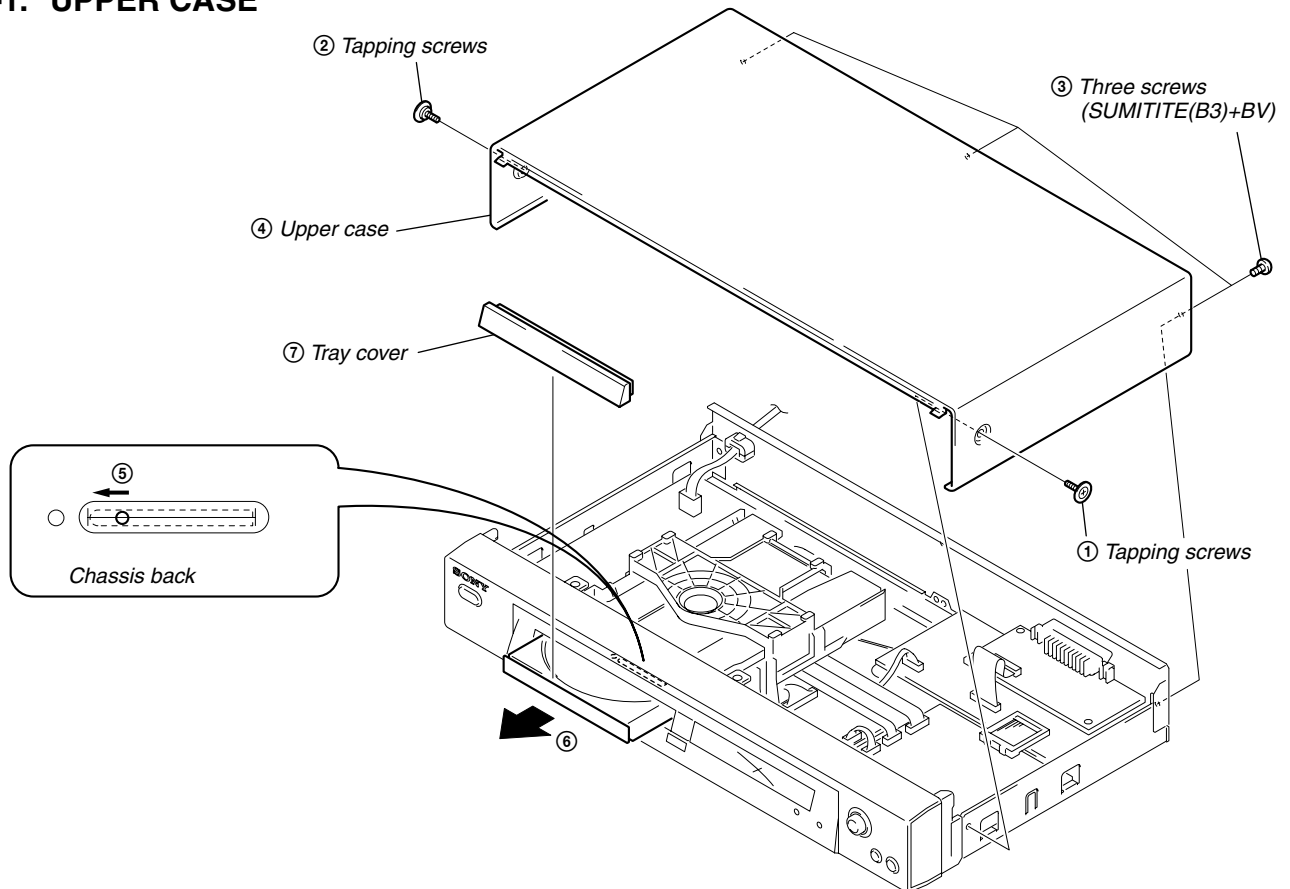
The language spellings conform to the ISO 639: 1988 (E/F) standard.

Code Language	Code Language	Code Language	Code Language
1027 Afar	1183 Irish	1347 Maori	1507 Samoan
1028 Abkhazian	1186 Scots Gaelic	1349 Macedonian	1508 Shona
1032 Afrikaans	1194 Galician	1350 Malayalam	1509 Somali
1039 Amharic	1196 Guarani	1352 Mongolian	1511 Albanian
1044 Arabic	1203 Gujarati	1353 Moldavian	1512 Serbian
1045 Assamese	1209 Hausa	1356 Marathi	1513 Siswati
1051 Aymara	1217 Hindi	1357 Malay	1514 Sesotho
1052 Azerbaijani	1226 Croatian	1358 Maltese	1515 Sundanese
1053 Bashkir	1229 Hungarian	1363 Burmese	1516 Swedish
1057 Byelorussian	1233 Armenian	1365 Nauru	1517 Swahili
1059 Bulgarian	1235 Interlingua	1369 Nepali	1521 Tamil
1060 Bihari	1239 Interlingue	1376 Dutch	1525 Telugu
1061 Bislama	1245 Inupiak	1379 Norwegian	1527 Tajik
1066 Bengali; Bangla	1248 Indonesian	1393 Occitan	1528 Thai
1067 Tibetan	1253 Icelandic	1403 (Afan)Oromo	1529 Tigrinya
1070 Breton	1254 Italian	1408 Oriya	1531 Turkmen
1079 Catalan	1257 Hebrew	1417 Punjabi	1532 Tagalog
1093 Corsican	1261 Japanese	1428 Polish	1534 Setswana
1097 Czech	1269 Yiddish	1435 Pashto; Pushto	1535 Tonga
1103 Welsh	1283 Javanese	1436 Portuguese	1538 Turkish
1105 Danish	1287 Georgian	1463 Quechua	1539 Tsonga
1109 German	1297 Kazakh	1463 Rhaeto-Romance	1540 Tatar
1130 Bhutani	1298 Greenlandic	1481 Rhaeto-Romance	1543 Twi
1142 Greek	1299 Cambodian	1482 Kirundi	1557 Ukrainian
1144 English	1300 Kannada	1483 Romanian	1564 Urdu
1145 Esperanto	1301 Korean	1489 Russian	1572 Uzbek
1149 Spanish	1305 Kashmiri	1489 Russian	1581 Vietnamese
1150 Estonian	1307 Kurdish	1491 Kinyarwanda	1587 Volapük
1151 Basque	1311 Kirghiz	1495 Sanskrit	1613 Wolof
1157 Persian	1313 Latin	1498 Sindhi	1632 Xhosa
1165 Finnish	1326 Lingala	1501 Sangho	1665 Yoruba
1166 Fiji	1327 Laotian	1502 Serbo-Croatian	1684 Chinese
1171 Faroese	1332 Lithuanian	1503 Singalese	1697 Zulu
1174 French	1334 Latvian; Lettish	1505 Slovak	
1181 Frisian	1345 Malagasy	1506 Slovenian	1703 Not specified

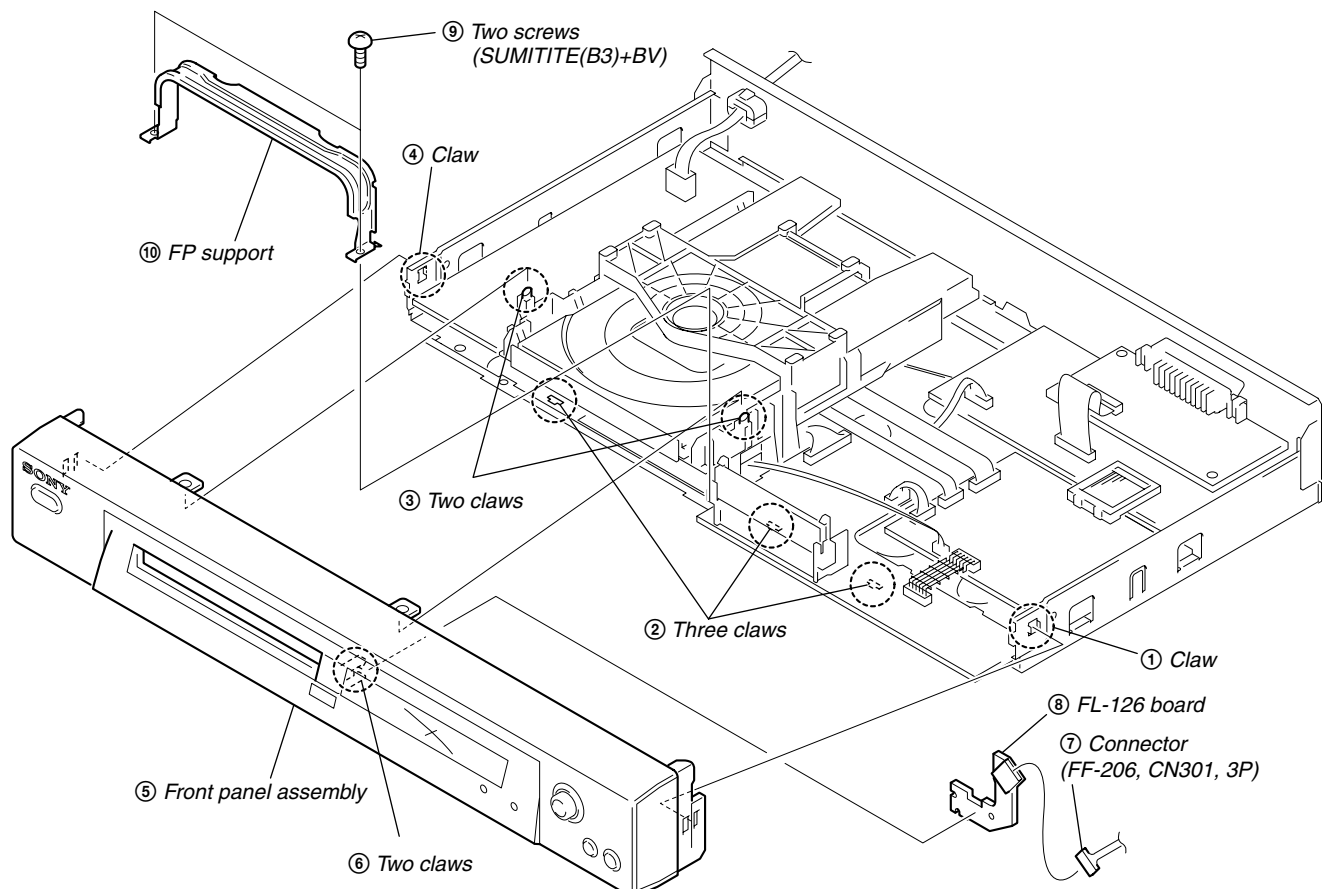
## SECTION 2 DISASSEMBLY

**NOTE:** Follow the disassembly procedure in the numerical order given.

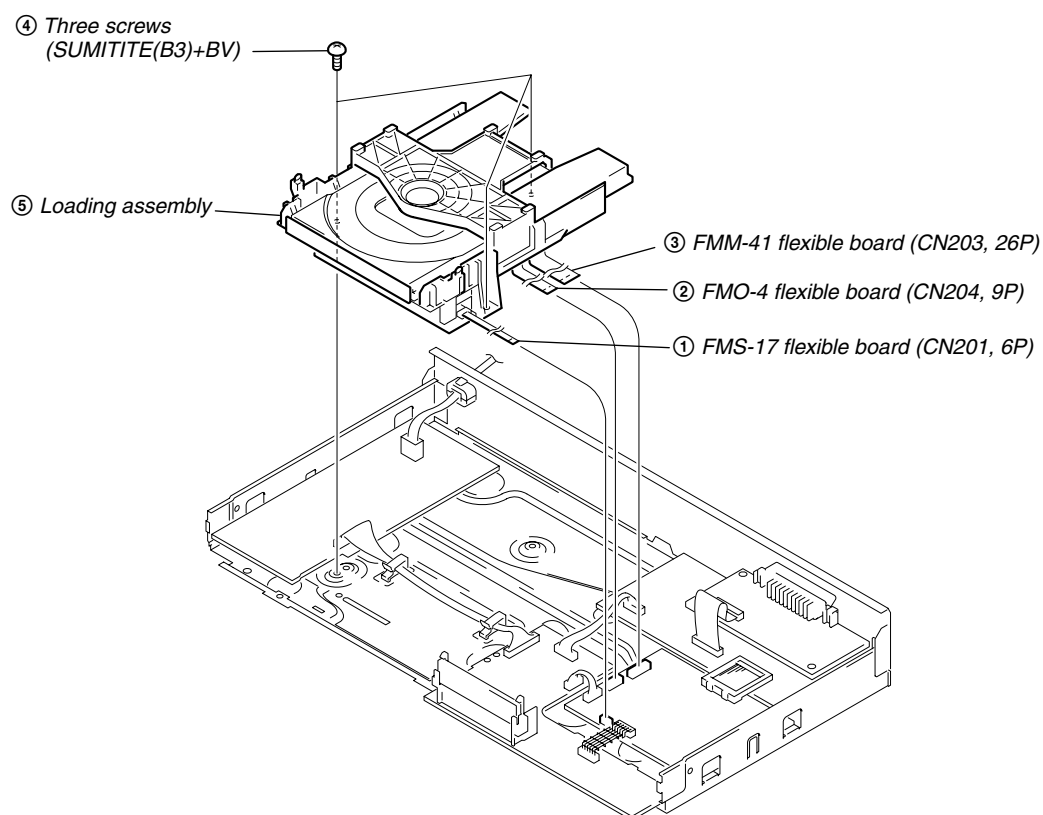
### 2-1. UPPER CASE



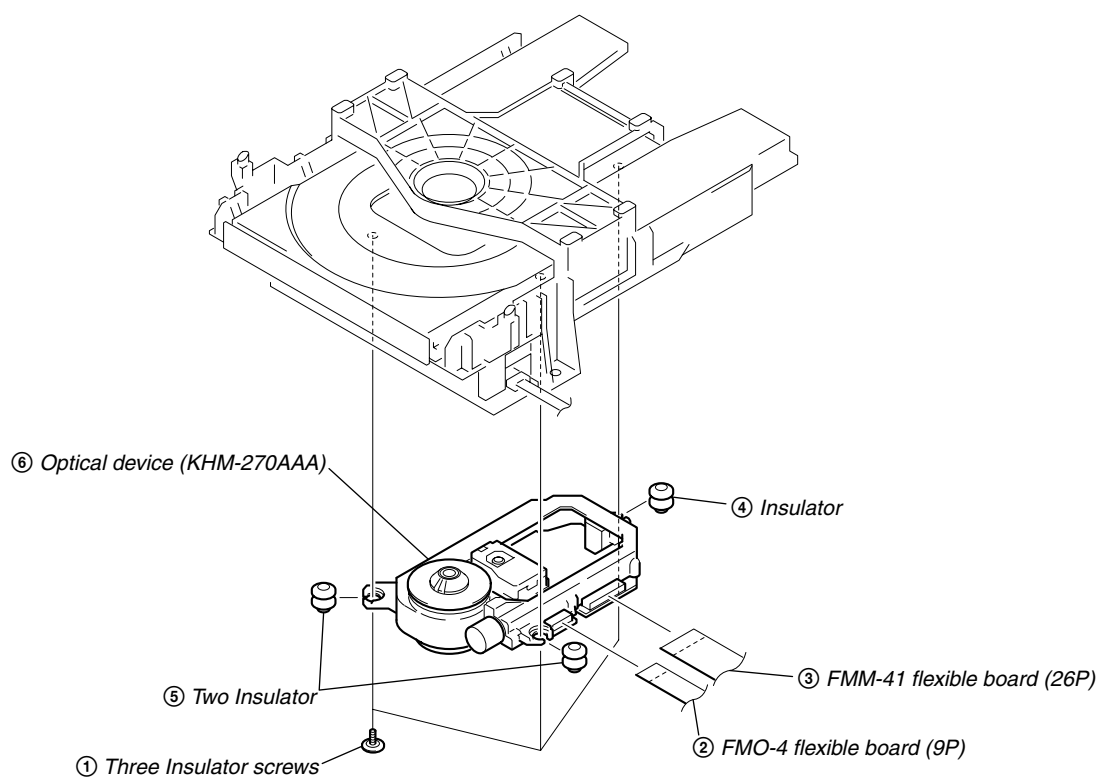
### 2-2. FRONT PANEL ASSEMBLY and FR SUPPORT



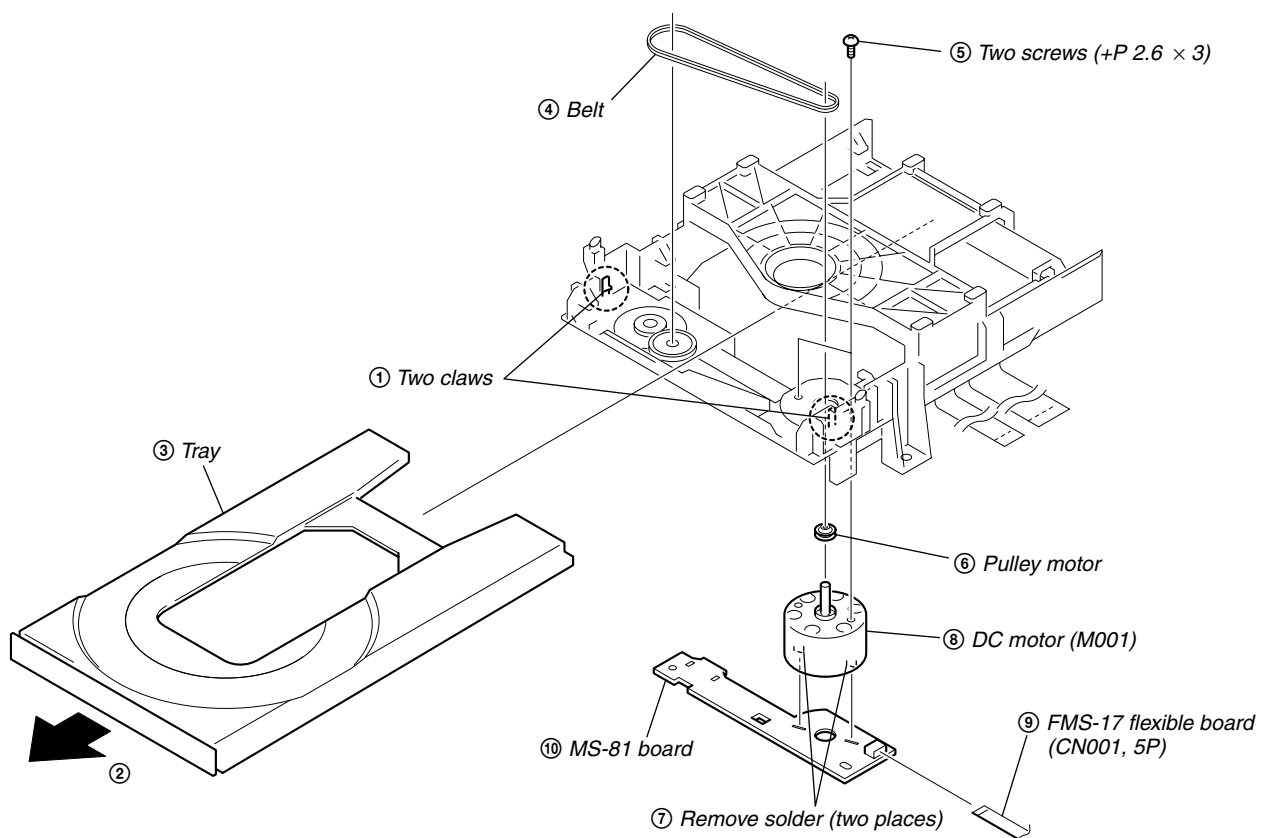
## 2-3. LOADING ASSEMBLY



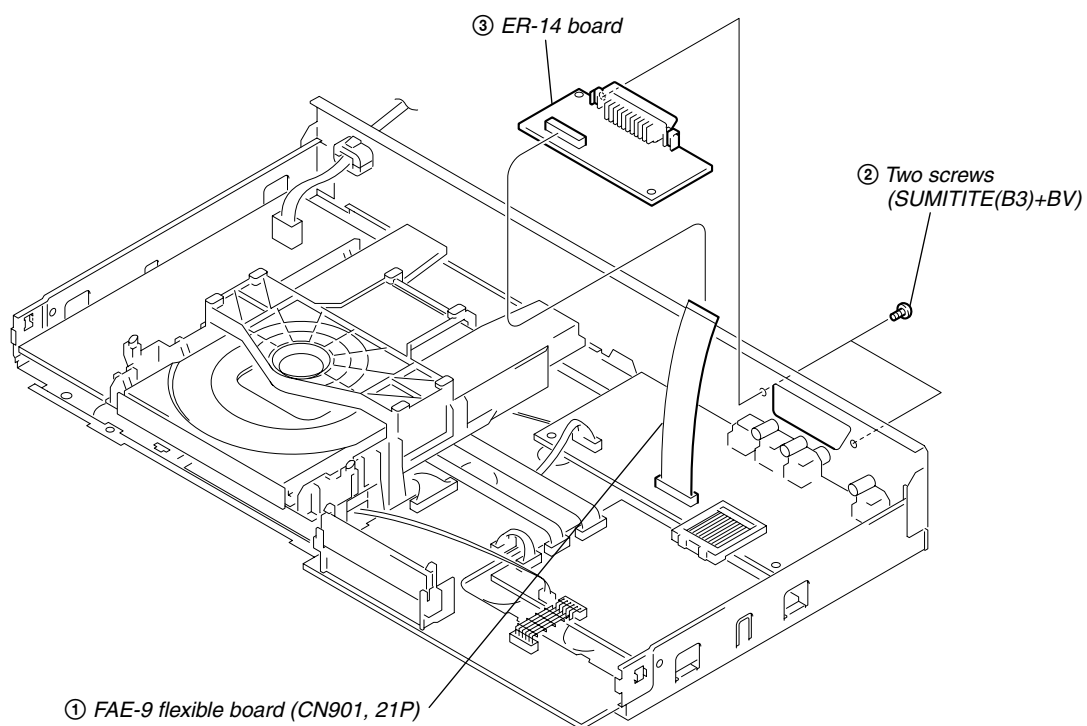
## 2-4. OPTICAL DEVICE (KHM-270AAA)



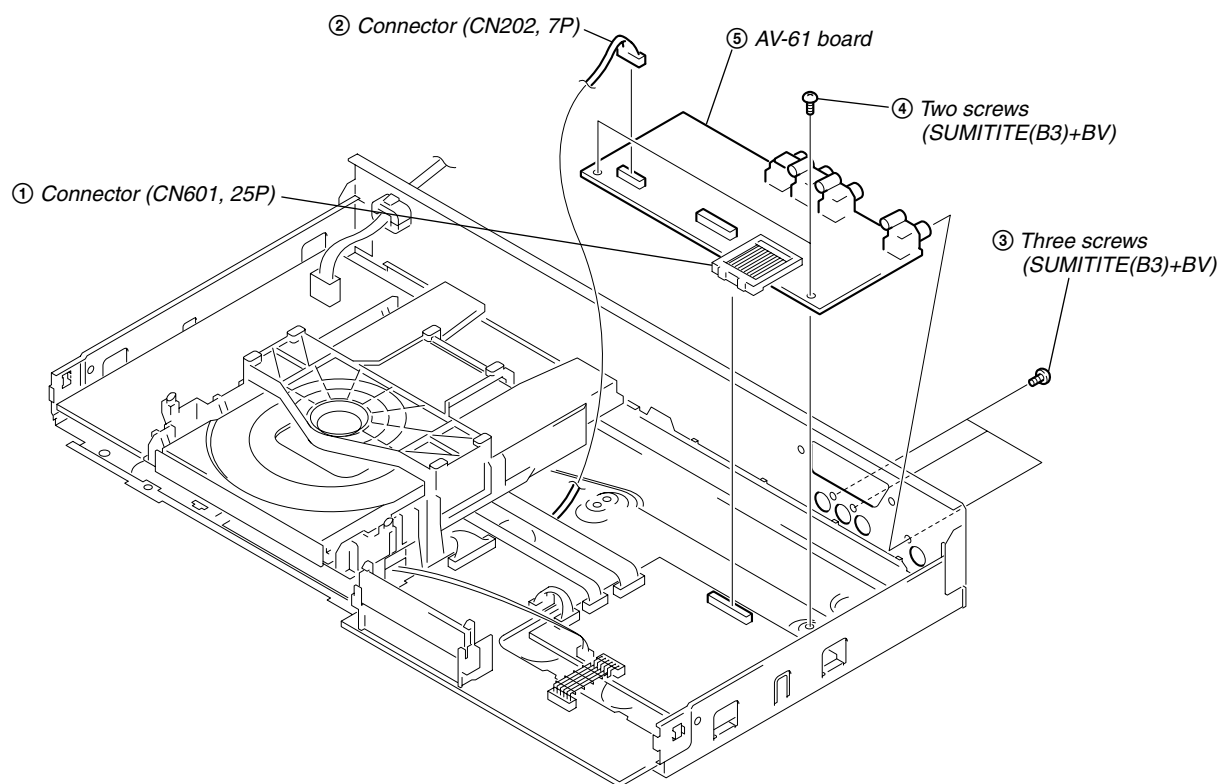
## 2-5. DC MOTOR and MS-81 BOARD



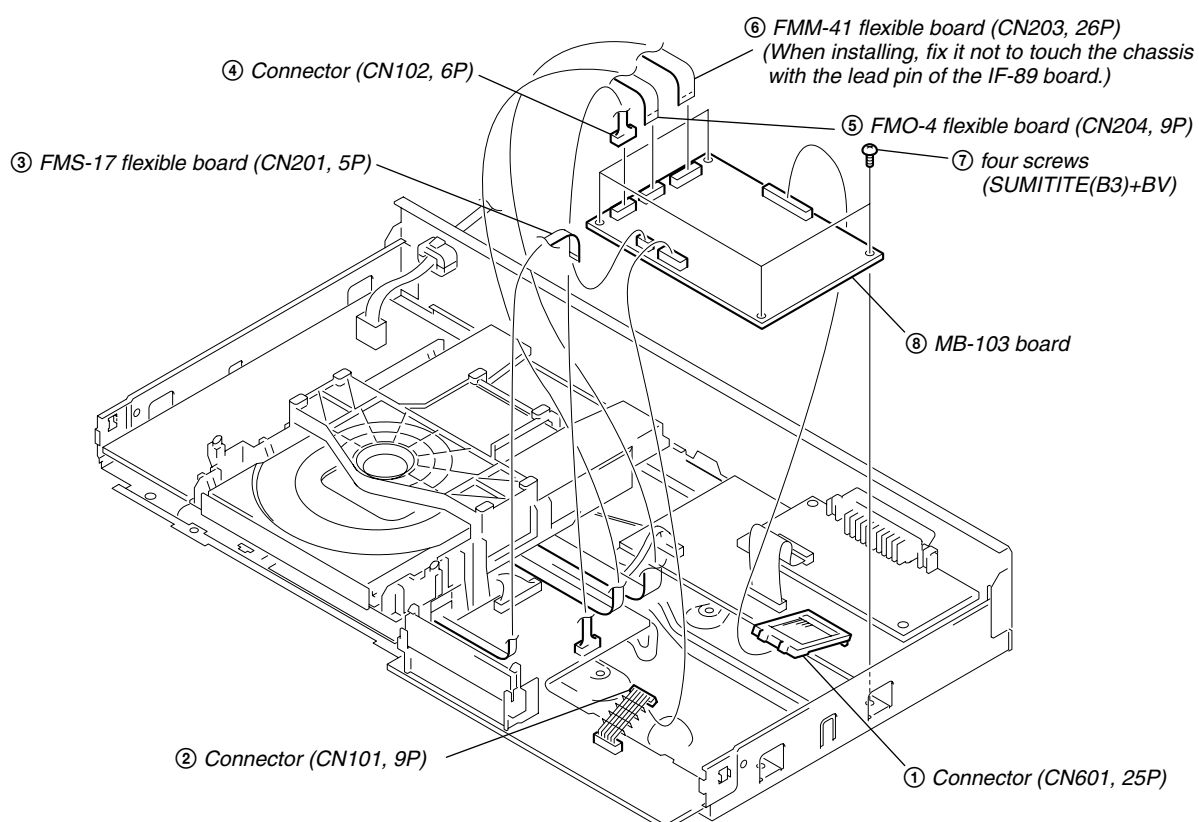
## 2-6. ER-14 BOARD (NS305:AEP,UK,RUSSIAN/NS310/NS405/NS410)



## 2-7. AV-61 BOARD

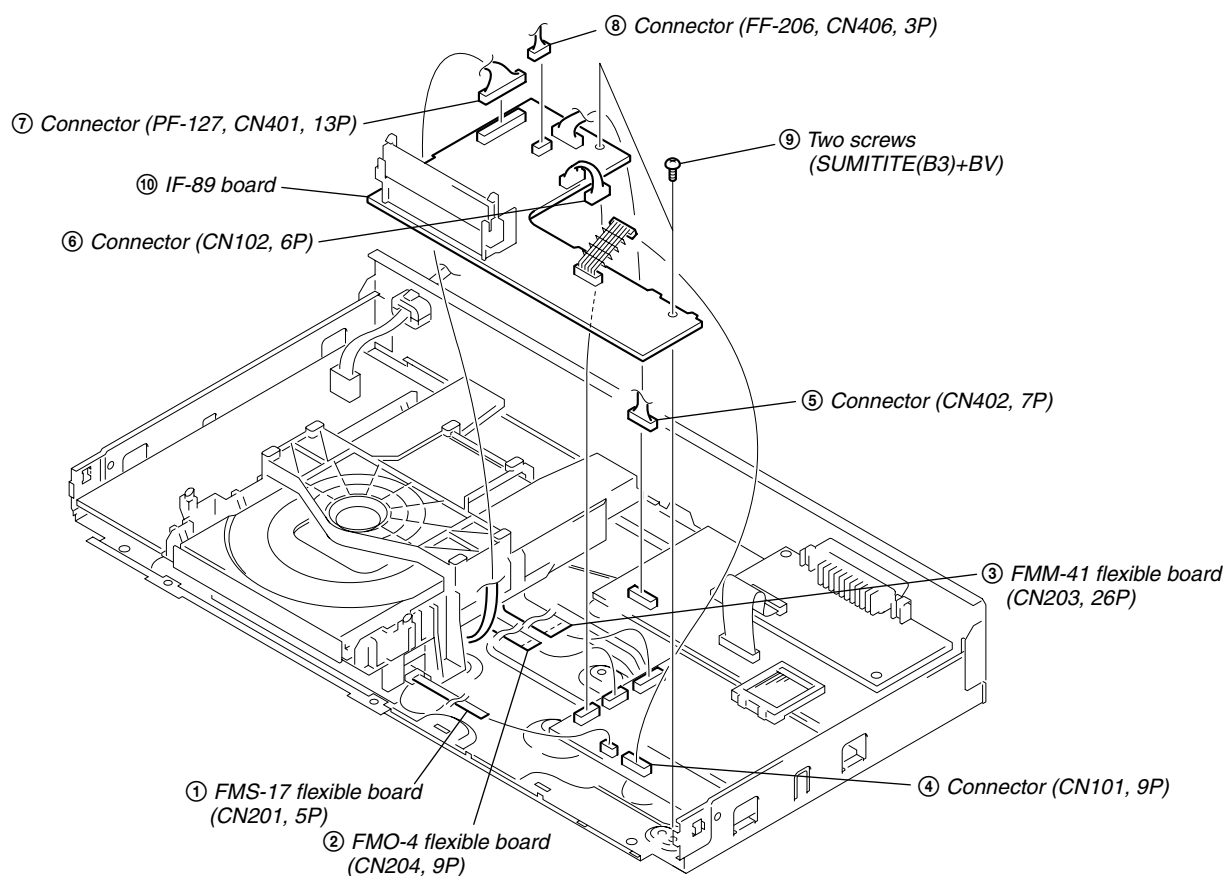


## 2-8. MB-103 BOARD

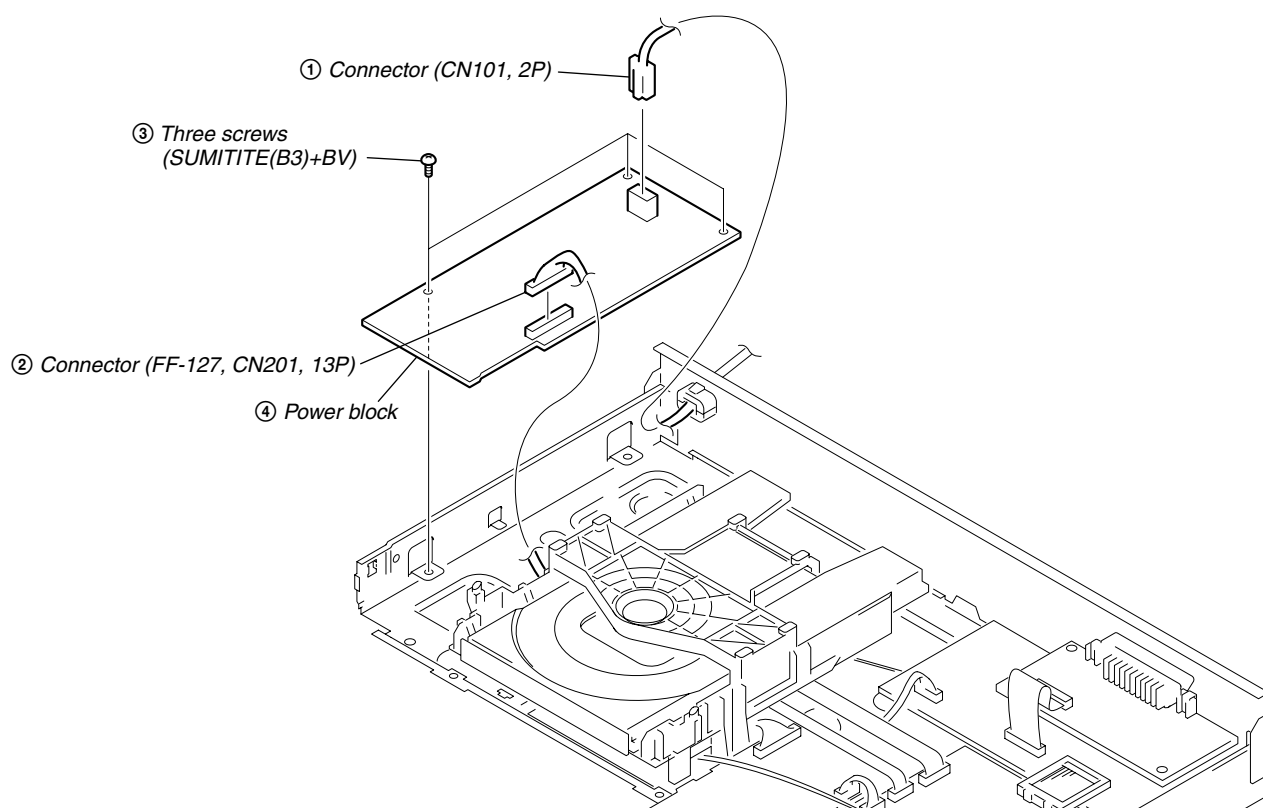




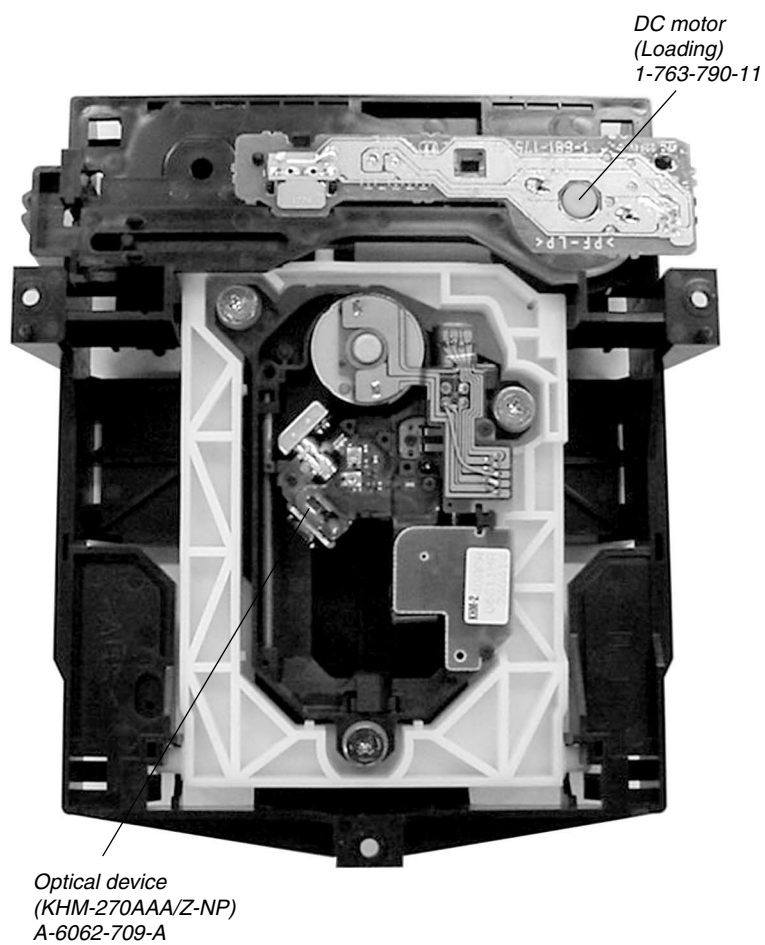
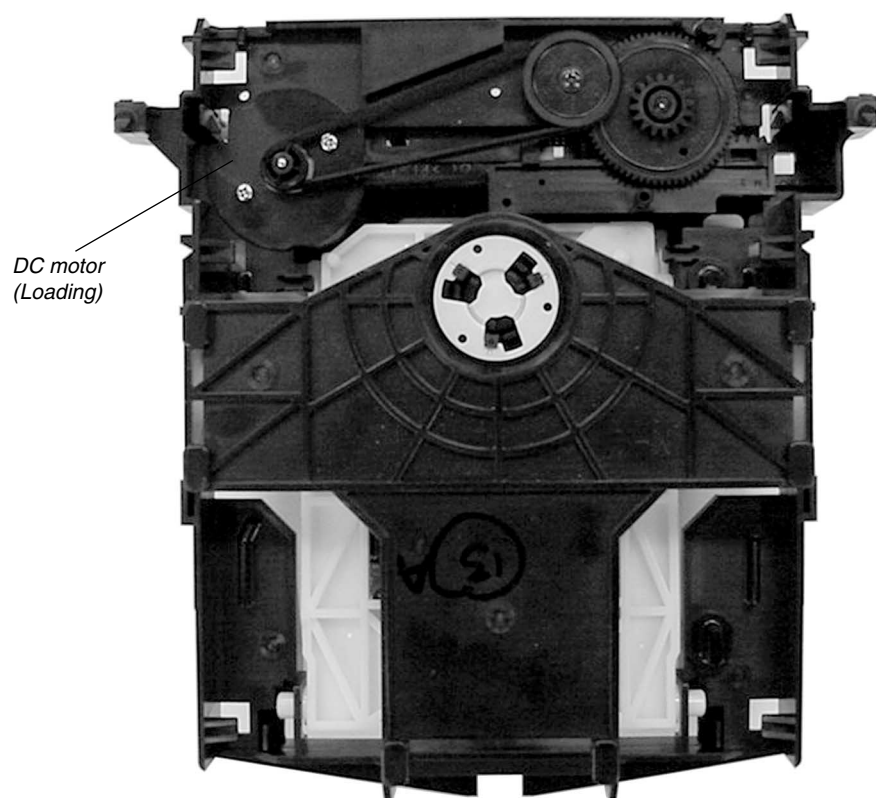
## 2-9. IF-89 BOARD



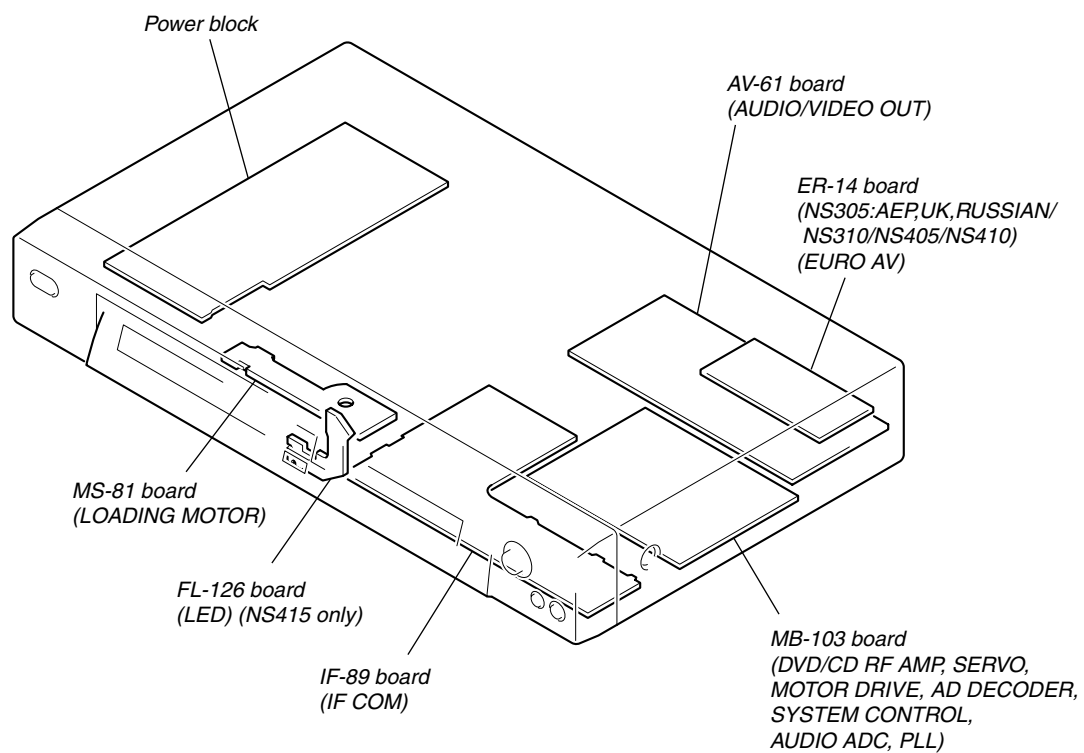
## 2-10. SWITCHING REGULATOR



## 2-11.INTERNAL VIEWS



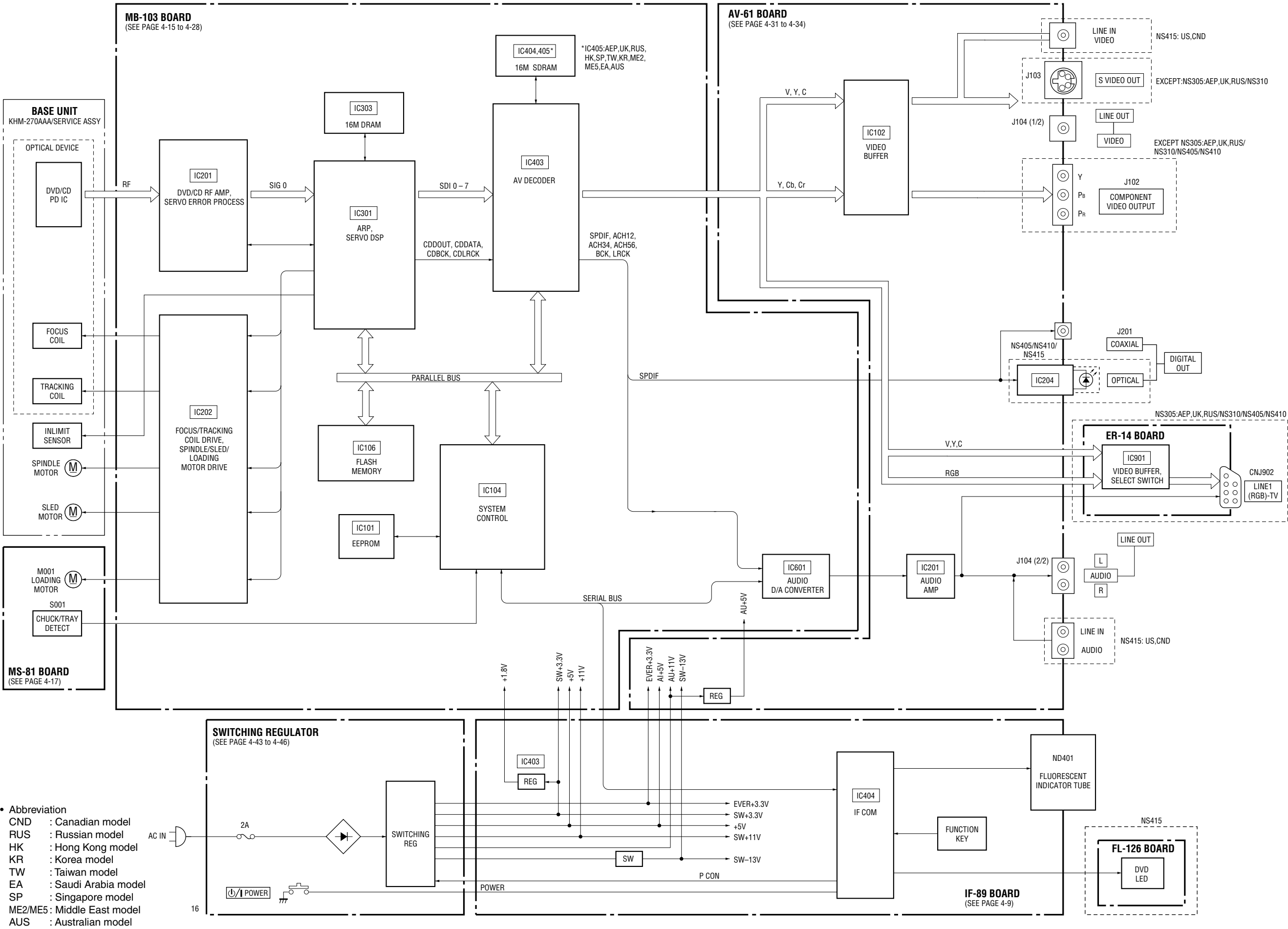
## 2-12. CIRCUIT BOARDS LOCATION



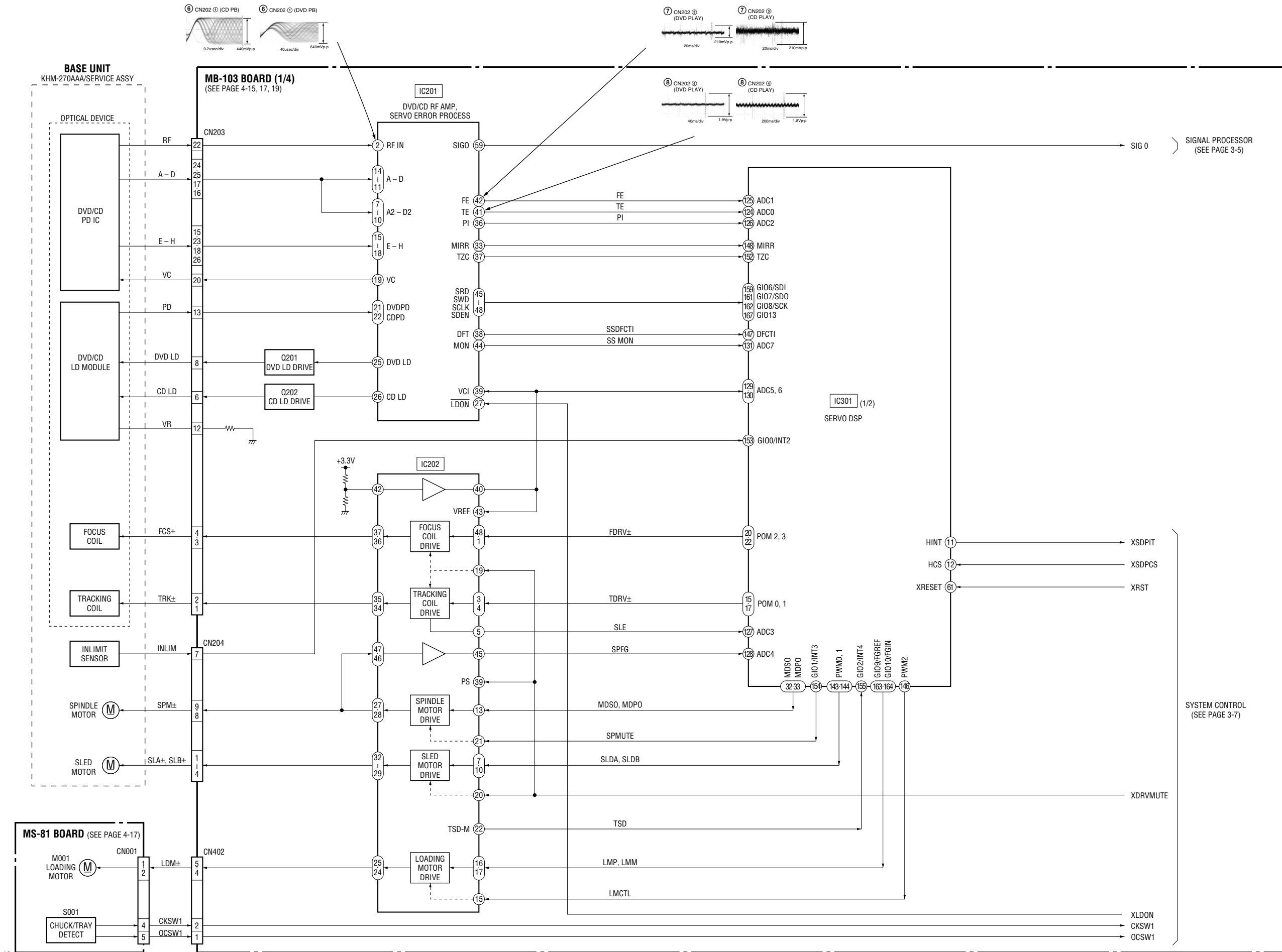
MEMO

SECTION 3  
BLOCK DIAGRAMS

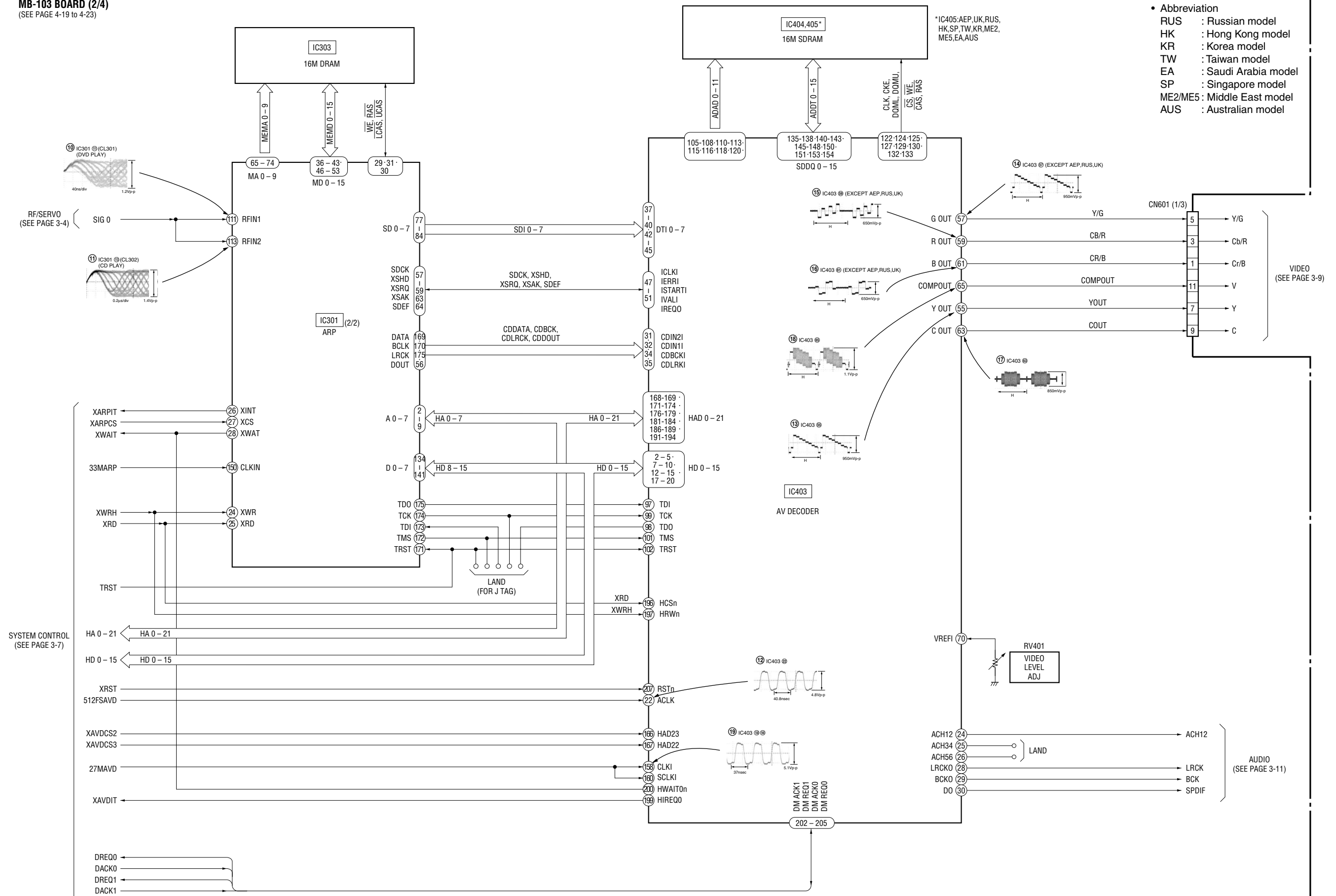
3-1. OVERALL BLOCK DIAGRAM



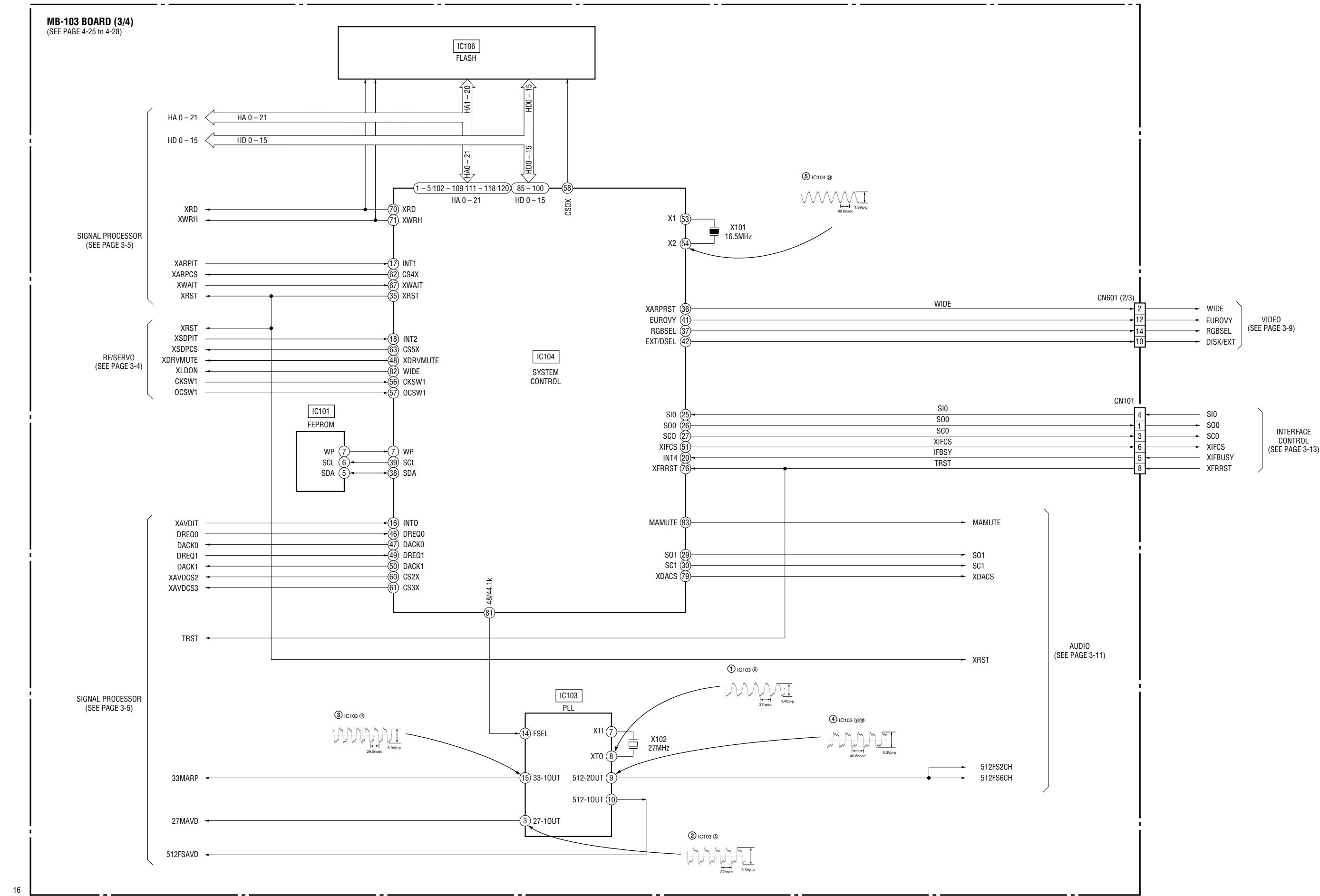
3-2. RF/SERVO BLOCK DIAGRAM



## 3-3. SIGNAL PROCESSOR BLOCK DIAGRAM

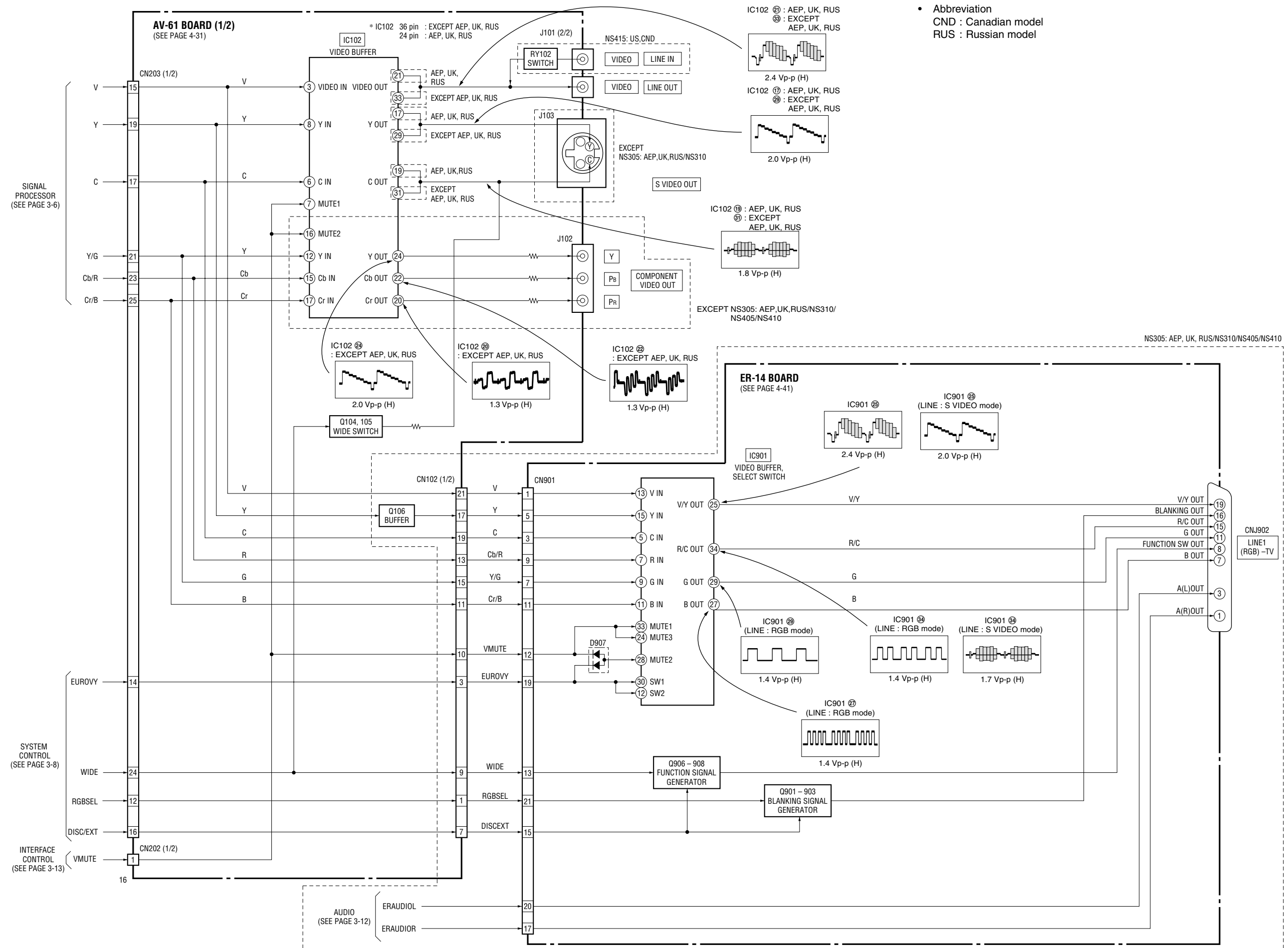
MB-103 BOARD (2/4)  
(SEE PAGE 4-19 to 4-23)

### 3-4. SYSTEM CONTROL BLOCK DIAGRAM

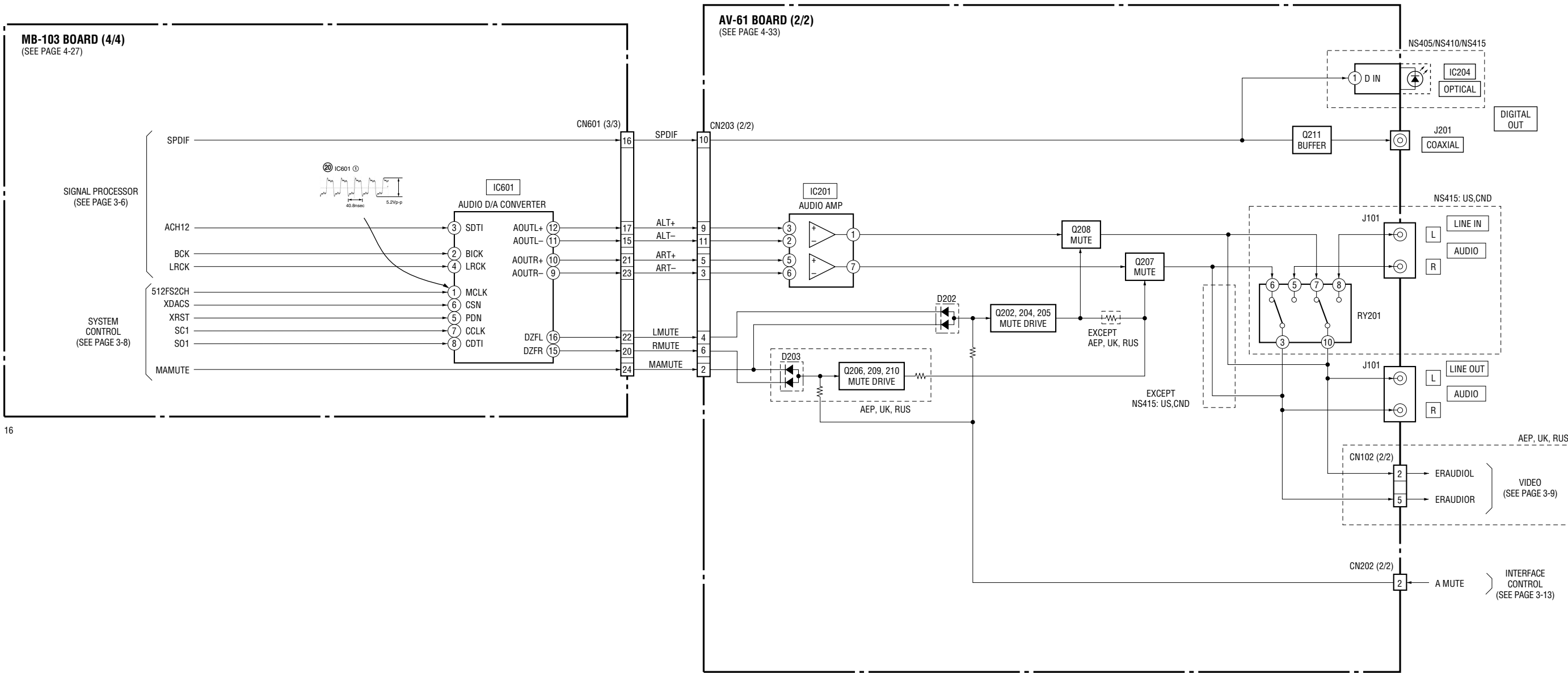




### 3-5. VIDEO BLOCK DIAGRAM

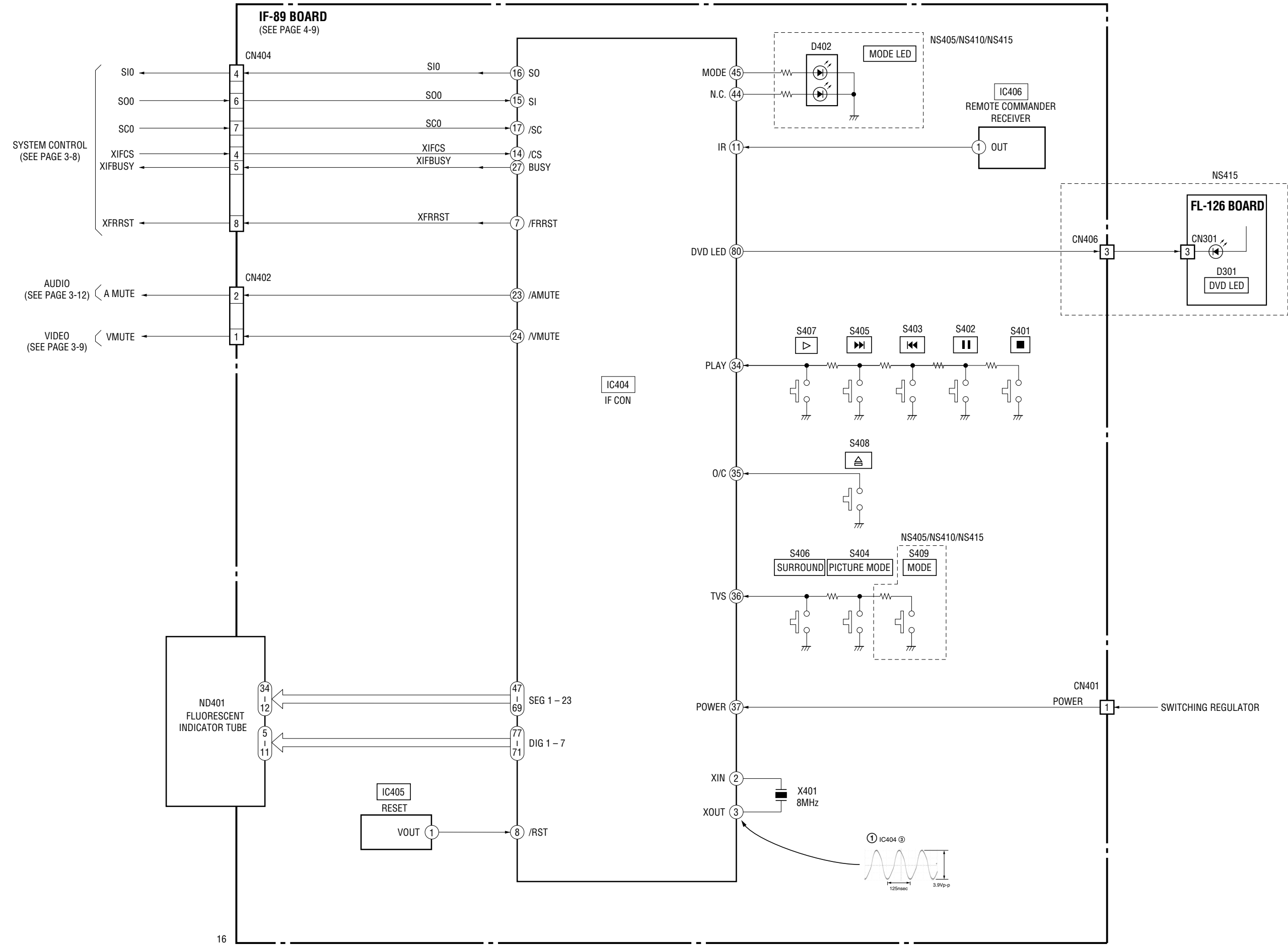


3-6. AUDIO BLOCK DIAGRAM

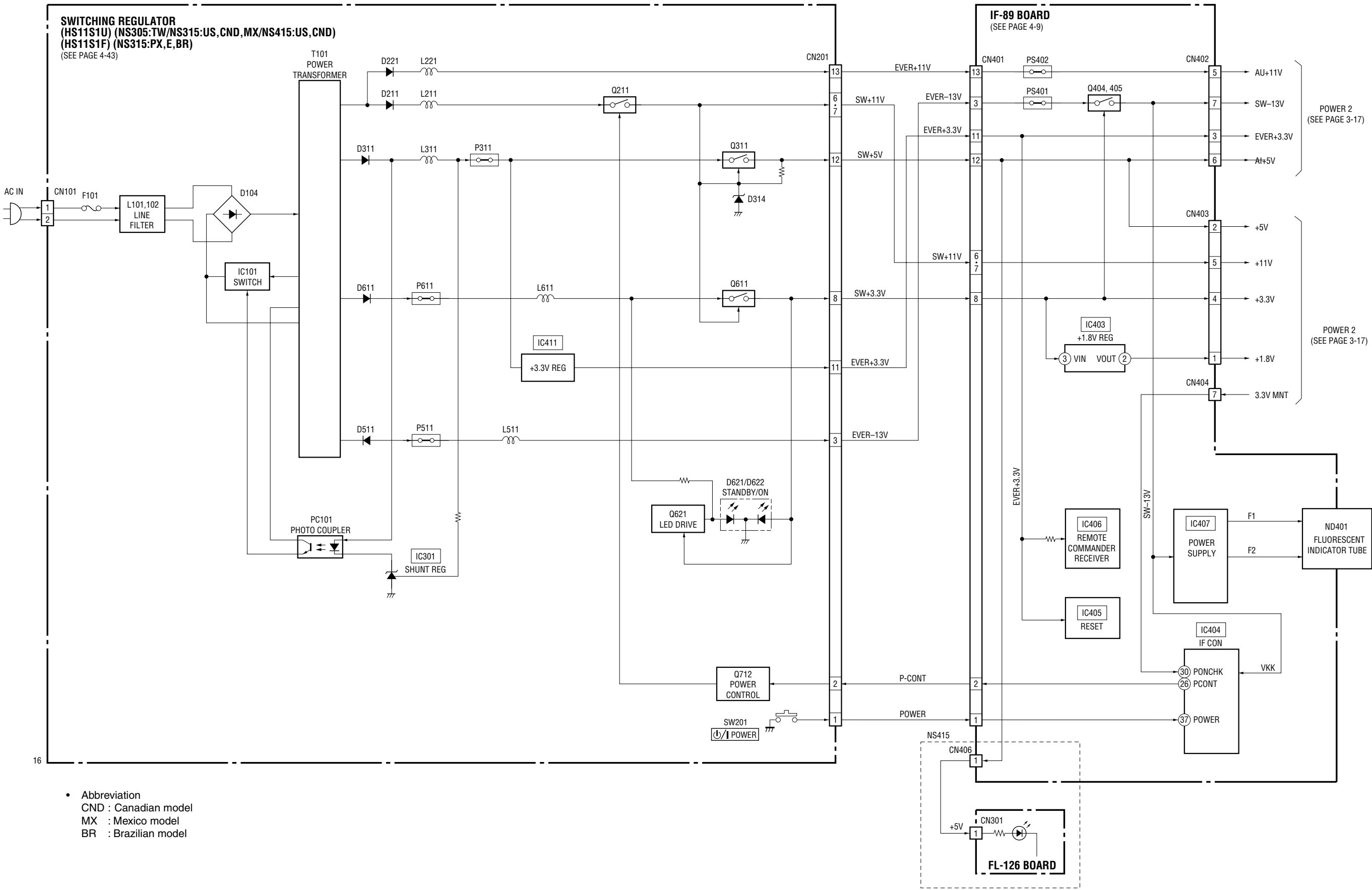


- Abbreviation  
CND : Canadian model  
RUS : Russian model

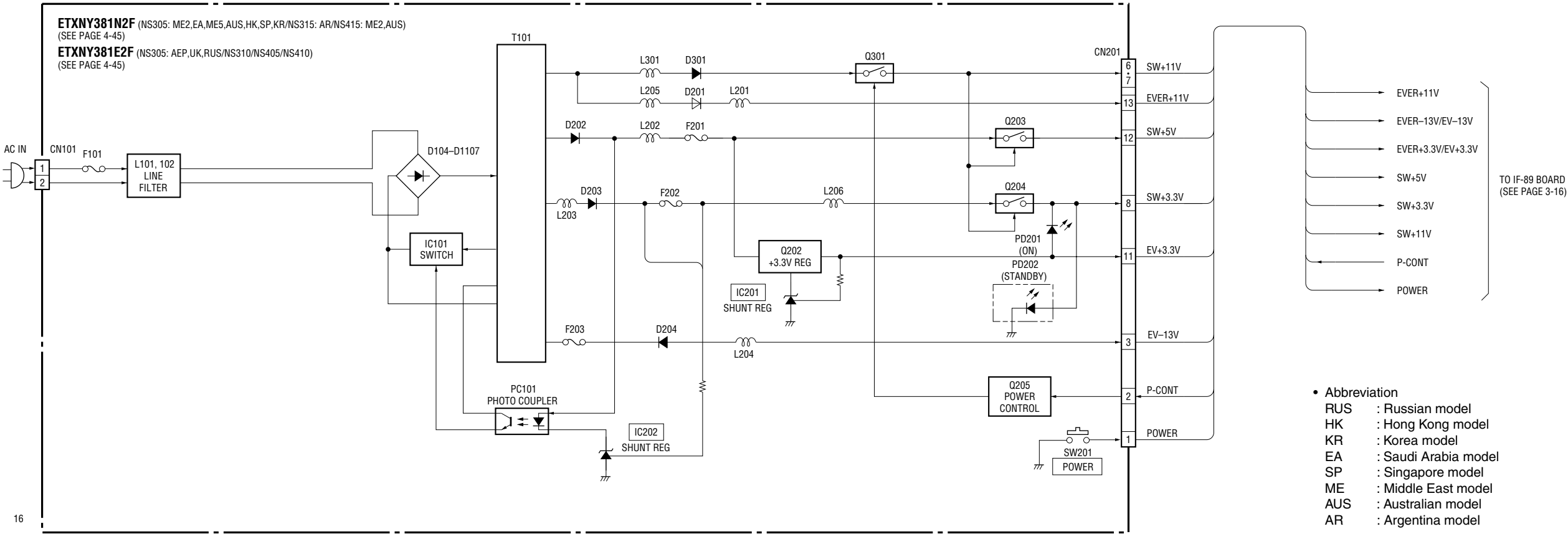
3-7. INTERFACE CONTROL BLOCK DIAGRAM



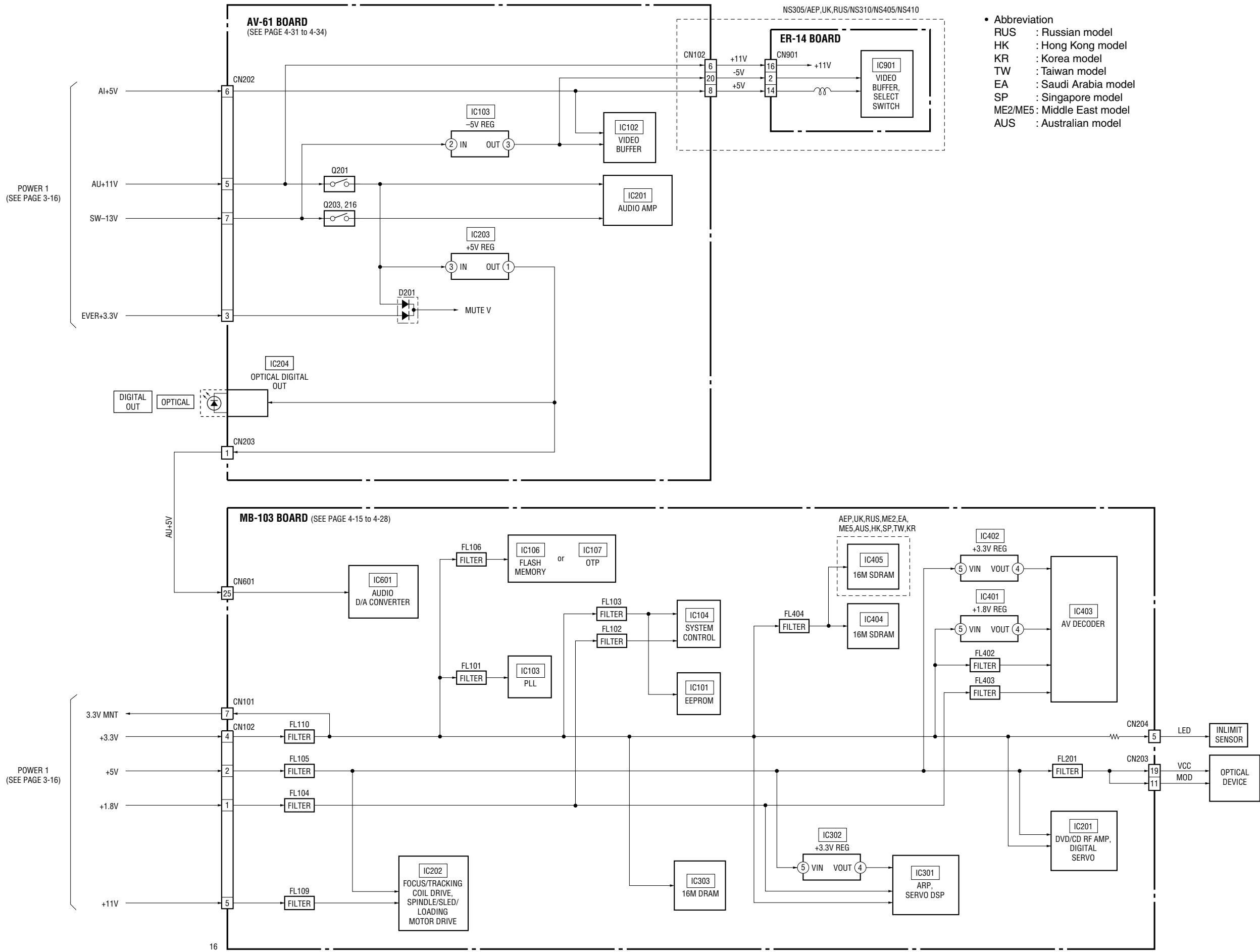
3-8. POWER BLOCK DIAGRAM (1/3)



3-9. POWER BLOCK DIAGRAM (2/3)

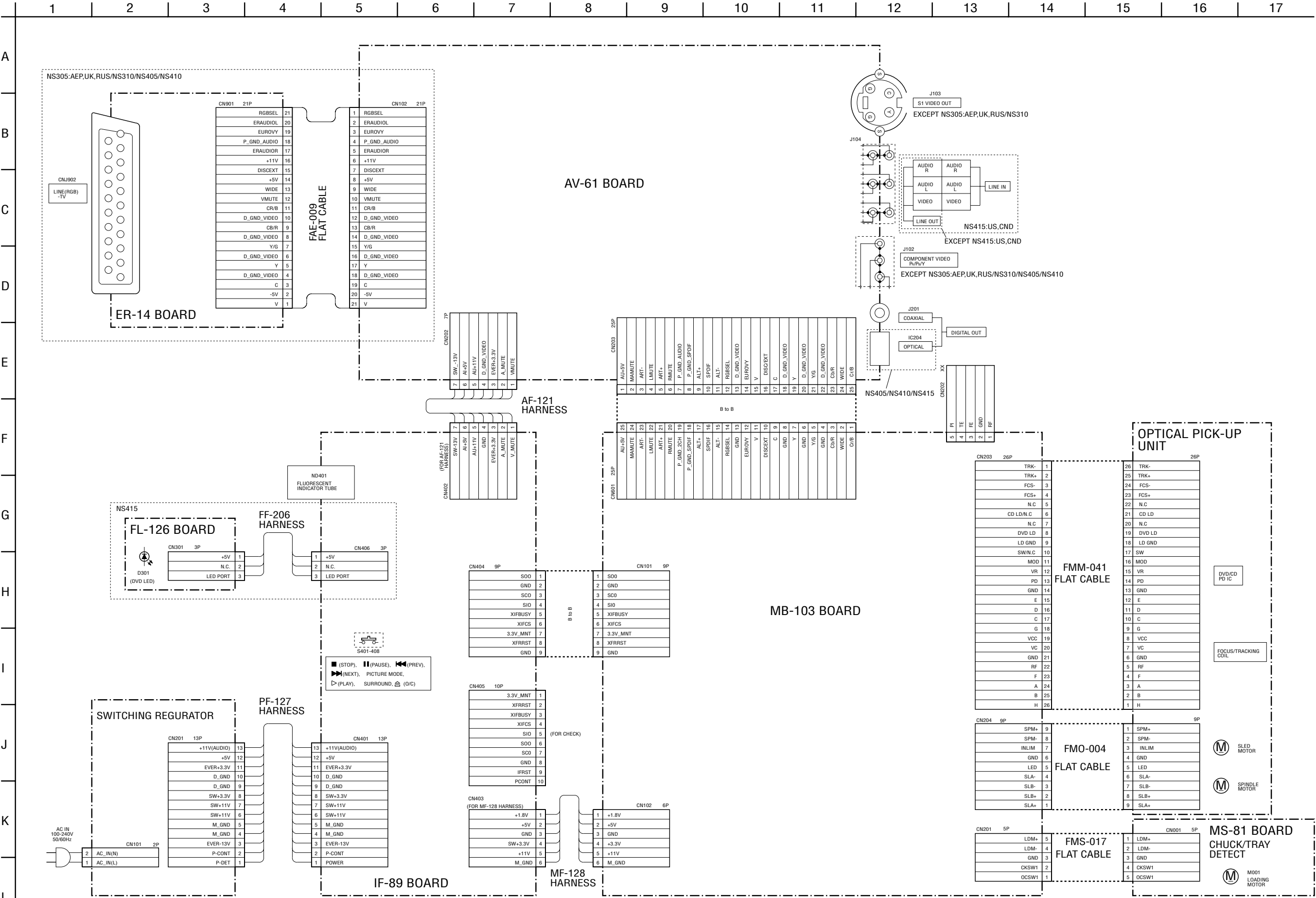


3-10. POWER BLOCK DIAGRAM (3/3)



SECTION 4  
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM





4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

**THIS NOTE IS COMMON FOR WIRING BOARDS AND SCHEMATIC DIAGRAMS**  
**(In addition to this, the necessary note is printed in each block)**

**(For printed wiring boards)**

- — : indicates a lead wire mounted on the component side.
- — : indicates a lead wire mounted on the printed side.
- : Through hole.
- Pattern from the side which enables seeing.  
(The other layers' patterns are not indicated.)

Caution:

Pattern face side: Parts on the pattern face side seen from (Side B) the pattern face are indicated.

Parts face side: Parts on the parts face side seen from (Side A) the parts face are indicated.

- Abbreviation
- CND : Canadian model
- RUS : Russian model
- HK : Hong Kong model
- KR : Korea model
- TW : Taiwan model
- EA : Saudi Arabia model
- SP : Singapore model
- ME : Middle East model
- AUS : Australian model
- MX : Mexico model
- AR : Argentina model
- BR : Brazilian model

**(For schematic diagrams)**

- All capacitors are in μF unless otherwise noted. pF : μμF. 50V or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, 1/4 W (Chip resistors : 1 /10 W) un-less otherwise specified.  
kΩ=1000Ω, MΩ=1000kΩ.
- Caution when replacing chip parts.  
New parts must be attached after removal of chip.  
Be careful not to heat the minus side of tantalum capacitor, be-cause it is damaged by the heat.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- non flammable resistor
- fusible resistor
- panel designation
- Δ : internal component.
- adjustment for repair.
- B + : B+ Line
- B − : B− Line
- Circled numbers refer to waveforms.
- Voltages are dc between measurement point.
- Readings are taken with a color-bar signals on DVD refer-ence disc and when playing CD reference disc.
- Readings are taken with a digital multimeter (DC 10MW).
- Voltage variations may be noted due to normal production toler-ances.

**Note :**  
The components identified by mark Δ or dotted line with mark Δ are critical for safety.  
Replace only with part number specified.

**Note :**  
Les composants identifiés par une marque Δ sont critiques pour la sécurité.  
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

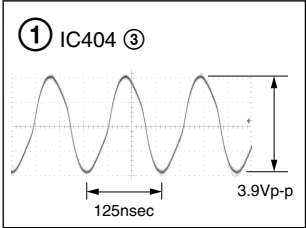
\* MARKED MOUNT TABLE

	NS305:AEP,UK, RU	NS305:ME1,EA,ME2, AUS,HK,SP,TW,KR	NS310	NS315	NS405	NS410	NS415:US,CND	NS415:ME2,AUS
C112	XX	0.1uF	XX	0.1uF	0.1uF	0.1uF	0.1uF	0.1uF
CN102	O	XX	O	XX	O	O	XX	XX
D101	XX	XX	XX	XX	XX	XX	1SS355TE-17	XX
D105	XX	HZM6.8ZWA1TL	XX	HZM6.8ZWA1TL	HZM6.8ZWA1TL	HZM6.8ZWA1TL	HZM6.8ZWA1TL	HZM6.8ZWA1TL
D106		HZM6.8ZWA1TL	XX	HZM6.8ZWA1TL	HZM6.8ZWA1TL	HZM6.8ZWA1TL	HZM6.8ZWA1TL	HZM6.8ZWA1TL
IC102	IC LA73051-TLM	IC LA73050-TLM	IC LA73051-TLM	IC LA73050-TLM	IC LA73051-TLM	IC LA73051-TLM	IC LA73050-TLM	IC LA73050-TLM
J102	XX	O	XX	O	XX	XX	O	O
J103	XX	O	XX	O	O	O	O	O
Q104	XX	UN2213-TX	XX	UN2213-TX	UN2213-TX	UN2213-TX	UN2213-TX	UN2213-TX
Q105	XX	UN2111-TX	XX	UN2111-TX	UN2111-TX	UN2111-TX	UN2111-TX	UN2111-TX
Q106	2SA1162-YG	XX	2SA1162-YG	XX	2SA1162-YG	2SA1162-YG	XX	XX
R121	XX	10K	XX	10K	10K	10K	10K	10K
R122	1K	XX	1K	XX	1K	1K	XX	XX
R126	XX	68	XX	68	XX	XX	68	68
R127	XX	68	XX	68	XX	XX	68	68
R128	XX	68	XX	68	XX	XX	68	68
R129	XX	10K	XX	10K	10K	10K	10K	10K
R133	XX	68	XX	68	68	68	68	68
R134	XX	68	XX	68	68	68	68	68
R154	0	0	0	0	0	0	XX	0
RY102	XX	XX	XX	XX	XX	XX	O	XX

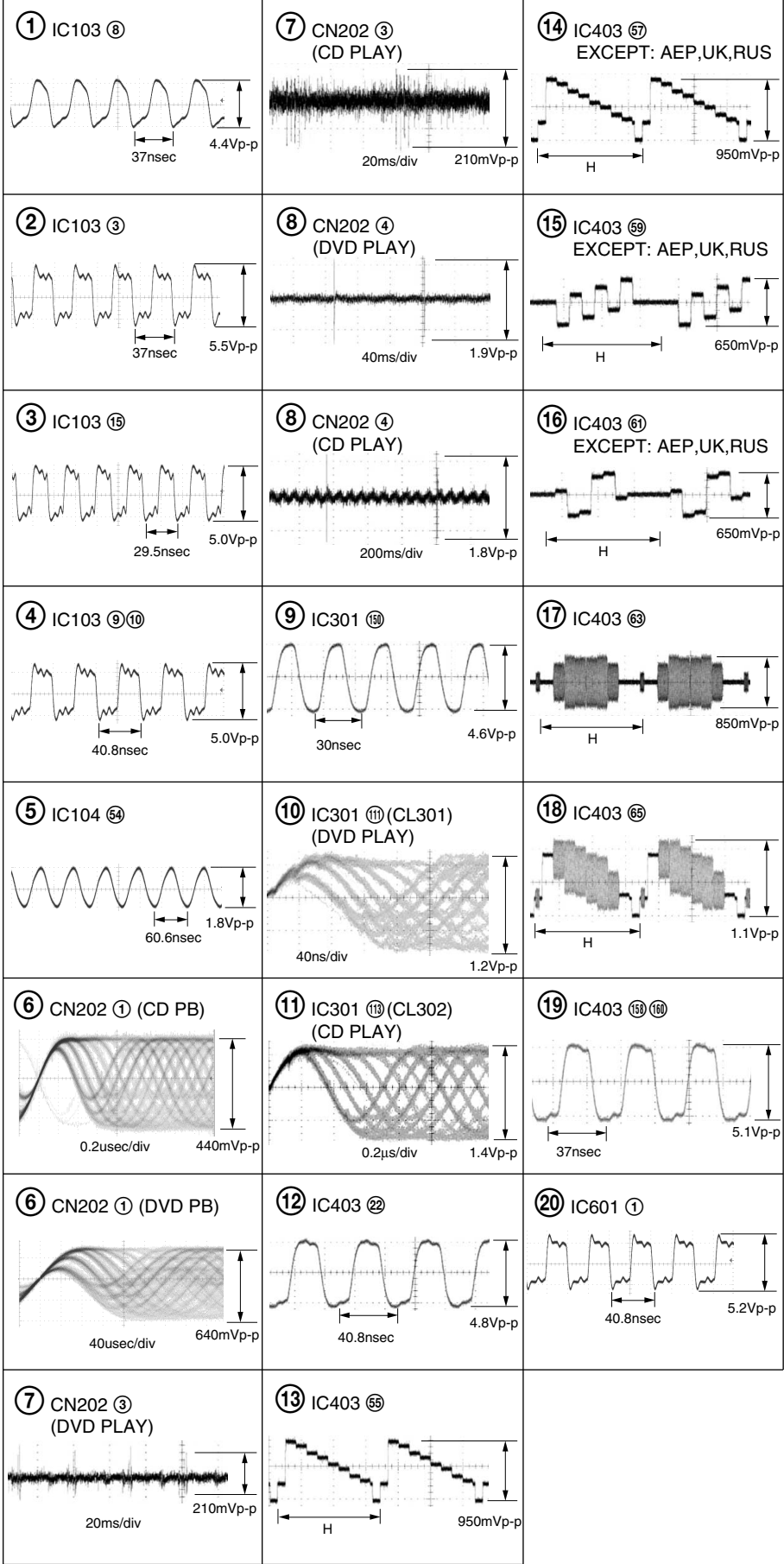
\* MARKED MOUNT TABLE

	NS305:AEP,UK, RU	NS305:ME1,EA,ME2, AUS,HK,SP,TW,KR	NS310	NS315	NS405	NS410	NS415:US,CND	NS415:ME2,AUS
C212	1uF	XX	1uF	XX	1uF	1uF	XX	XX
C215	220P	220P	220P	XX	220P	220P	XX	XX
C216	220P	220P	220P	XX	220P	220P	XX	XX
D203	DAP202K-T-146	XX	DAP202K-T-146	XX	DAP202K-T-146	DAP202K-T-146	XX	XX
D206	XX	XX	XX	XX	XX	XX	1SS355TE-17	XX
IC201	TJM4558CDT	BA4558F-E2	TJM4558CDT	BA4558F-E2	TJM4558CDT	TJM4558CDT	BA4558F-E2	BA4558F-E2
IC204	XX	XX	XX	XX	GP1FA550TZ	GP1FA550TZ	GP1FA550TZ	TOTX178A
Q206	UN2213-TX	XX	UN2213-TX	XX	UN2213-TX	UN2213-TX	XX	XX
Q209	TDTC124TKA-T146	XX	TDTC124TKA-T146	XX	TDTC124TKA-T146	TDTC124TKA-T146	XX	XX
Q210	2SB709A-QRS-TX	XX	2SB709A-QRS-TX	XX	2SB709A-QRS-TX	2SB709A-QRS-TX	XX	XX
R214	4.7K	XX	4.7K	XX	4.7K	4.7K	XX	XX
R231	10K	XX	10K	XX	10K	10K	XX	XX
R232	10K	XX	10K	XX	10K	10K	XX	XX
R233	47K	XX	47K	XX	47K	47K	XX	XX
R235	XX	4.7K	XX	4.7K	XX	XX	4.7K	4.7K
R236	10K	XX	10K	XX	10K	10K	XX	XX
R237	4.7K	XX	4.7K	XX	4.7K	4.7K	XX	XX
R239	100K	XX	100K	XX	100K	100K	XX	XX
R244	XX	XX	XX	XX	XX	XX	47K	XX
R245	XX	XX	XX	XX	XX	XX	47K	XX
R284	0	0	0	0	0	0	XX	O
R285	0	0	0	0	0	0	XX	O
RY201	XX	XX	XX	XX	XX	XX	O	XX

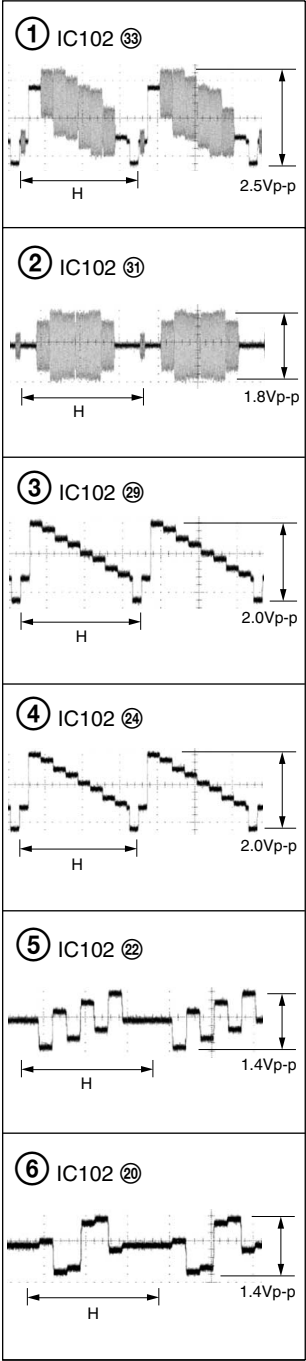
IF-089 BOARD




MB-103 BOARD



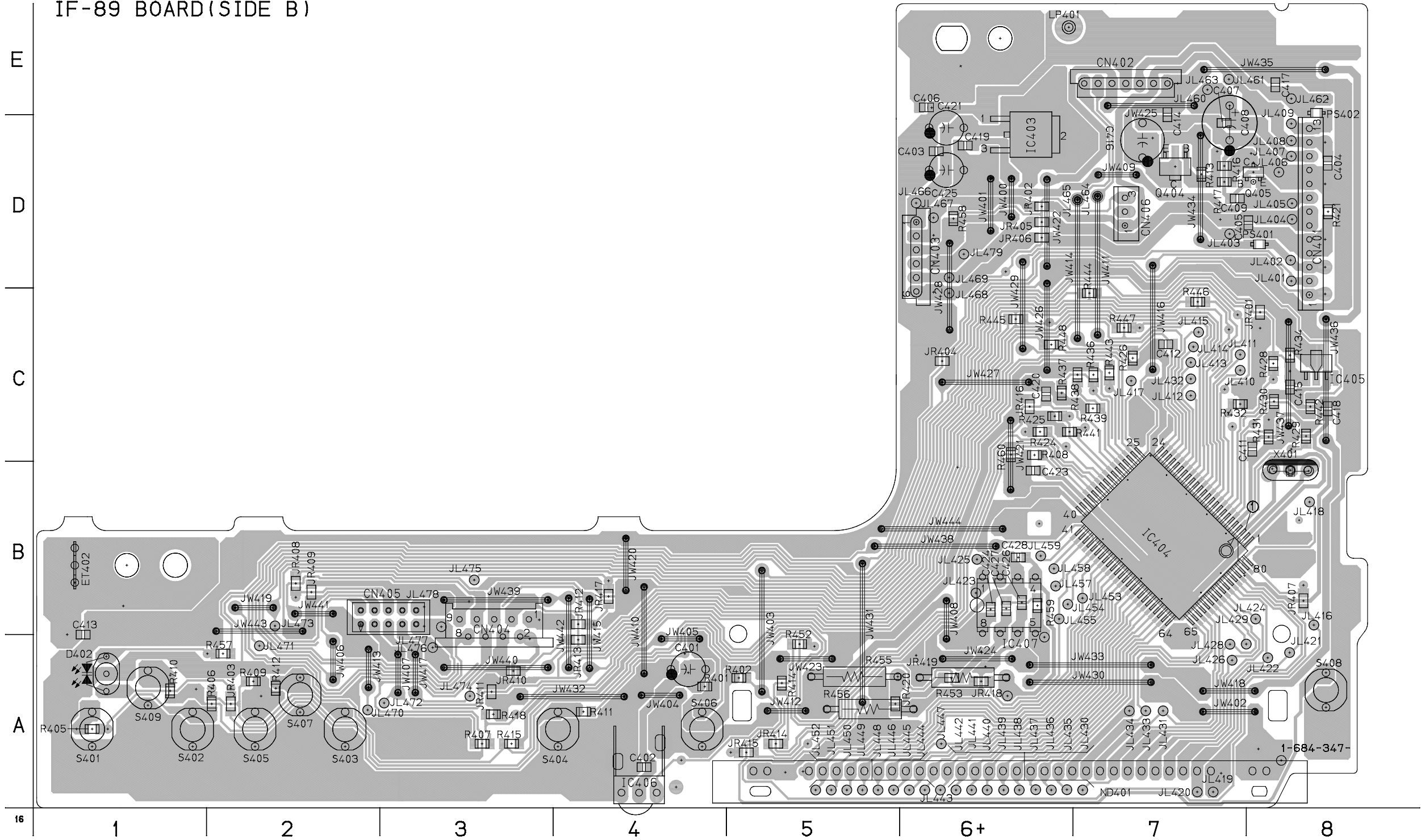
AV-61 BOARD



IF-89 (IF COM) PRINTED WIRING BOARD

•  : Uses unleaded solder.

IF-89 BOARD (SIDE B)

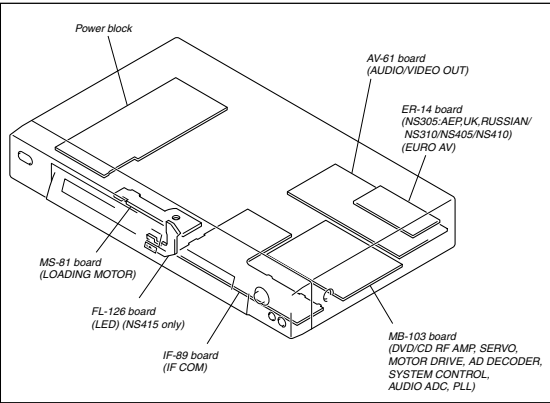


For printed wiring board

There are a few cases that the part printed on this diagram isn't mounted in this model.

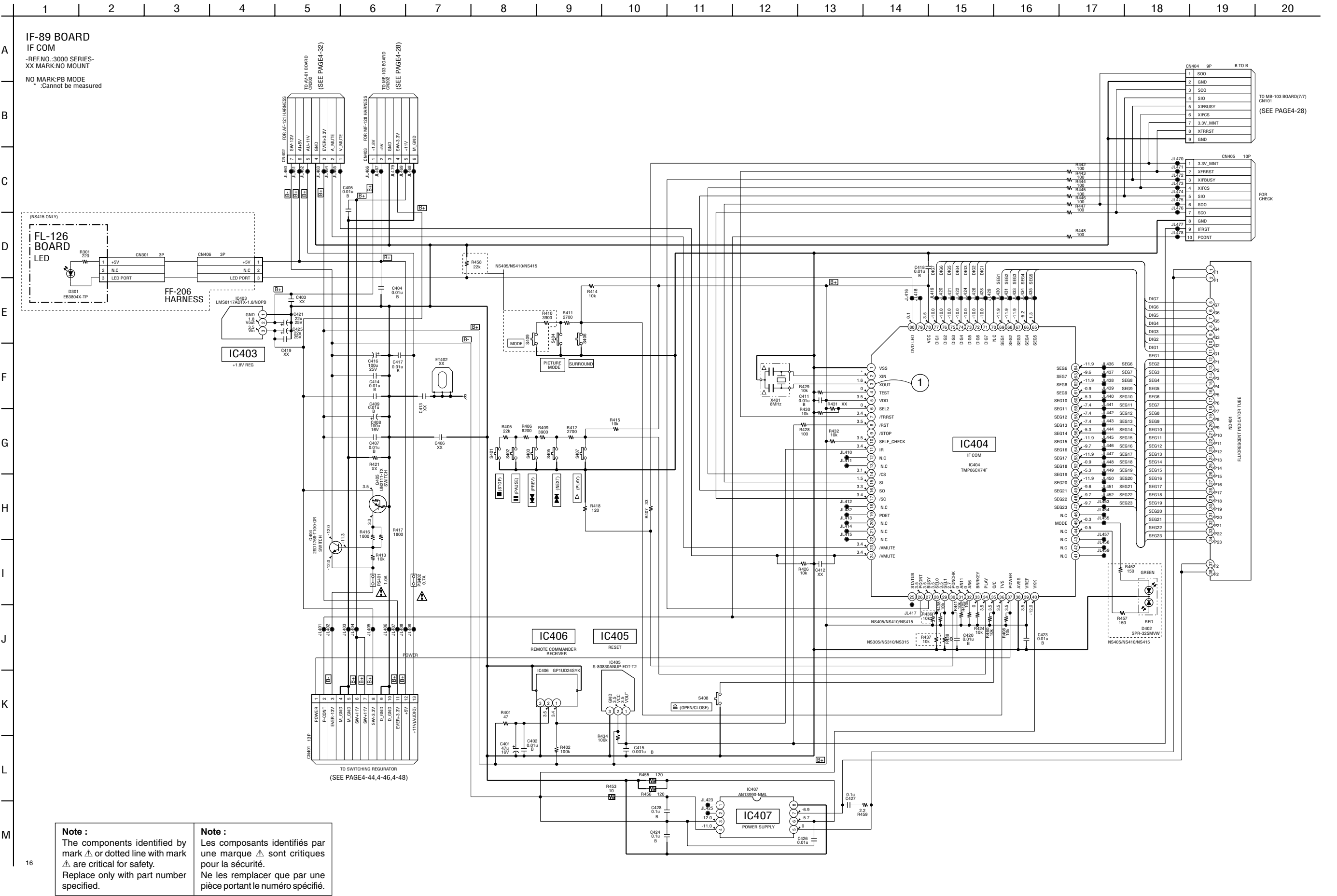
IF-89 BOARD

CN401	D-8	Q404	D-7
CN402	E-7	Q405	D-8
CN403	D-6		
CN404	B-3	S401	A-1
CN405	B-3	S402	A-2
CN406	D-7	S403	A-2
		S404	A-4
IC403	D-6	S405	A-2
IC404	B-7	S406	A-4
IC405	C-8	S407	A-2
IC406	A-4	S408	A-8
IC407	B-6		



For Schematic Diagram

- Refer to page 4-7 for printed board of IF-89 board.
- Refer to page 4-5 for waveform.




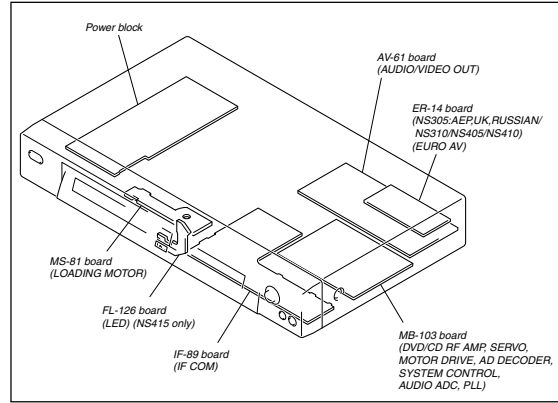
MB-103 (DVD/CD RF AMP, DIGITAL SERVO, MOTOR DRIVE, SERVO, AV DECODER, SDRAM, SYSTEM CONTROL,  
AUDIO DAC, PLL) PRINTED WIRING BOARD

MB-103 BOARD (SIDE A)

CN101	A-3
CN102	A-1
CN103	A-4
CN201	A-2
CN203	C-1
CN204	B-1
CN601	D-1
IC104	B-4
IC301	A-2
IC302	B-2
IC402	D-5
IC403	C-4
IC601	D-3
RV401	D-4

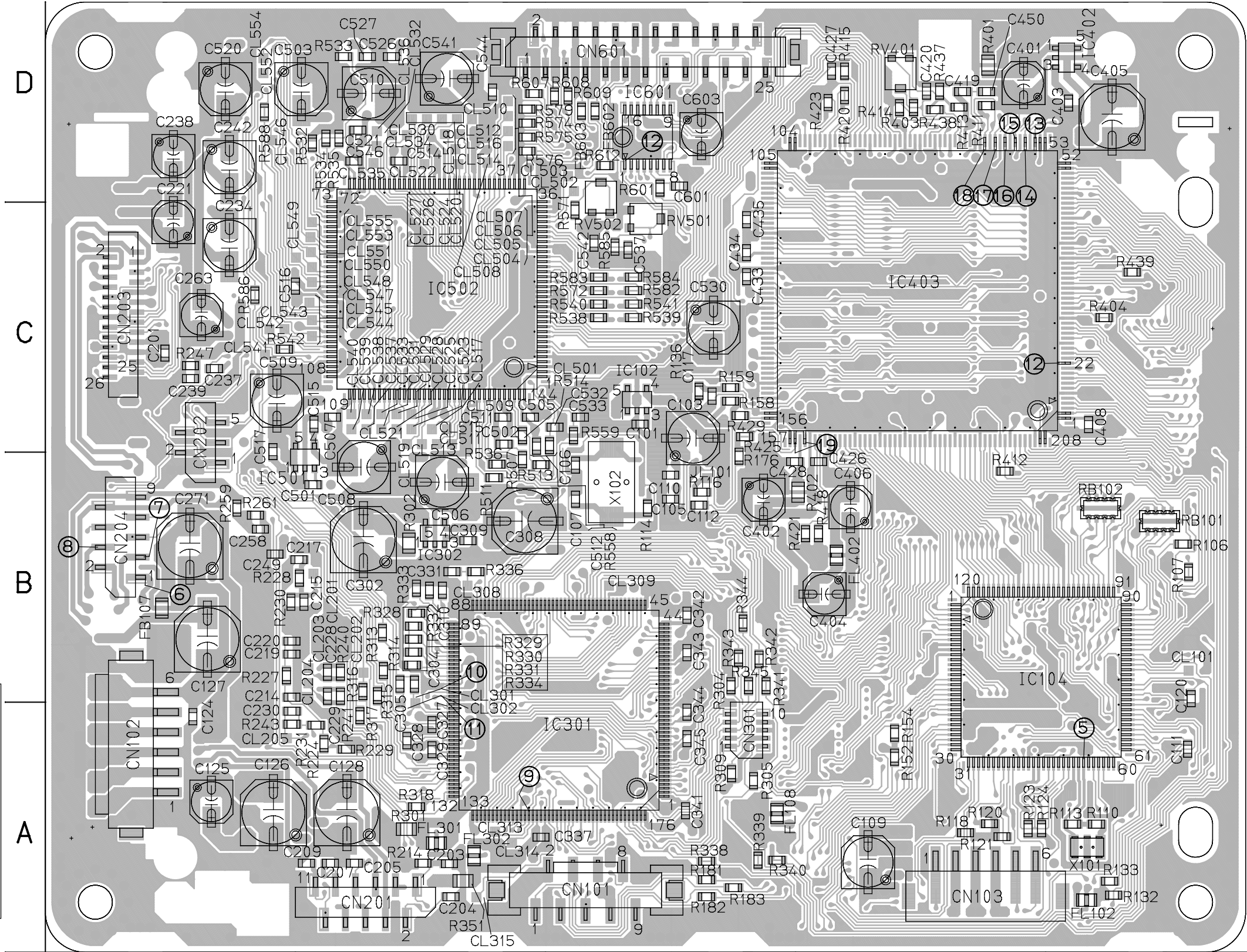
MB-103 BOARD (SIDE A)

•  : Uses unleaded solder.




For printed wiring board

There are a few cases that the part printed on this diagram isn't mounted in this model.



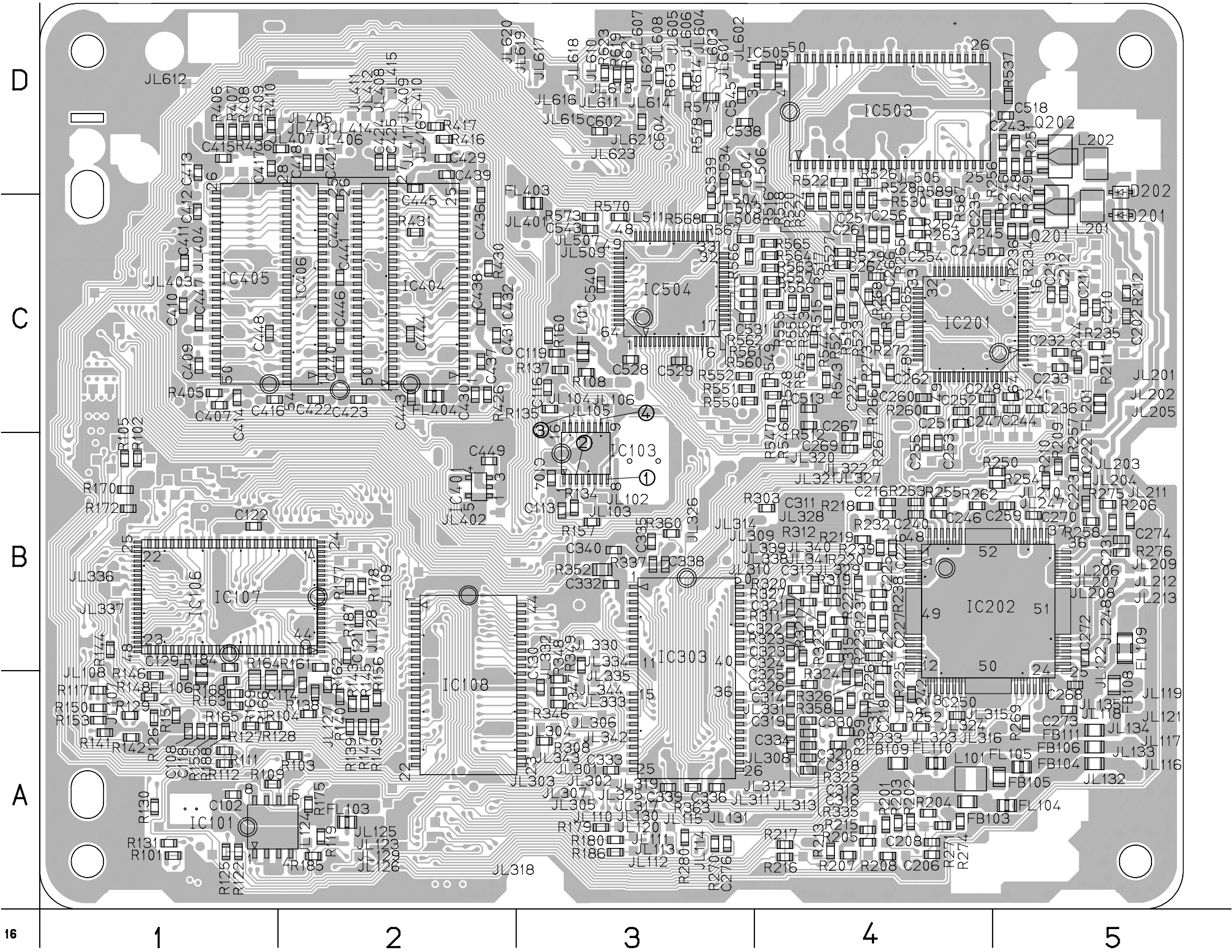


MB-103 BOARD (SIDE B)

•  : Uses unleaded solder.

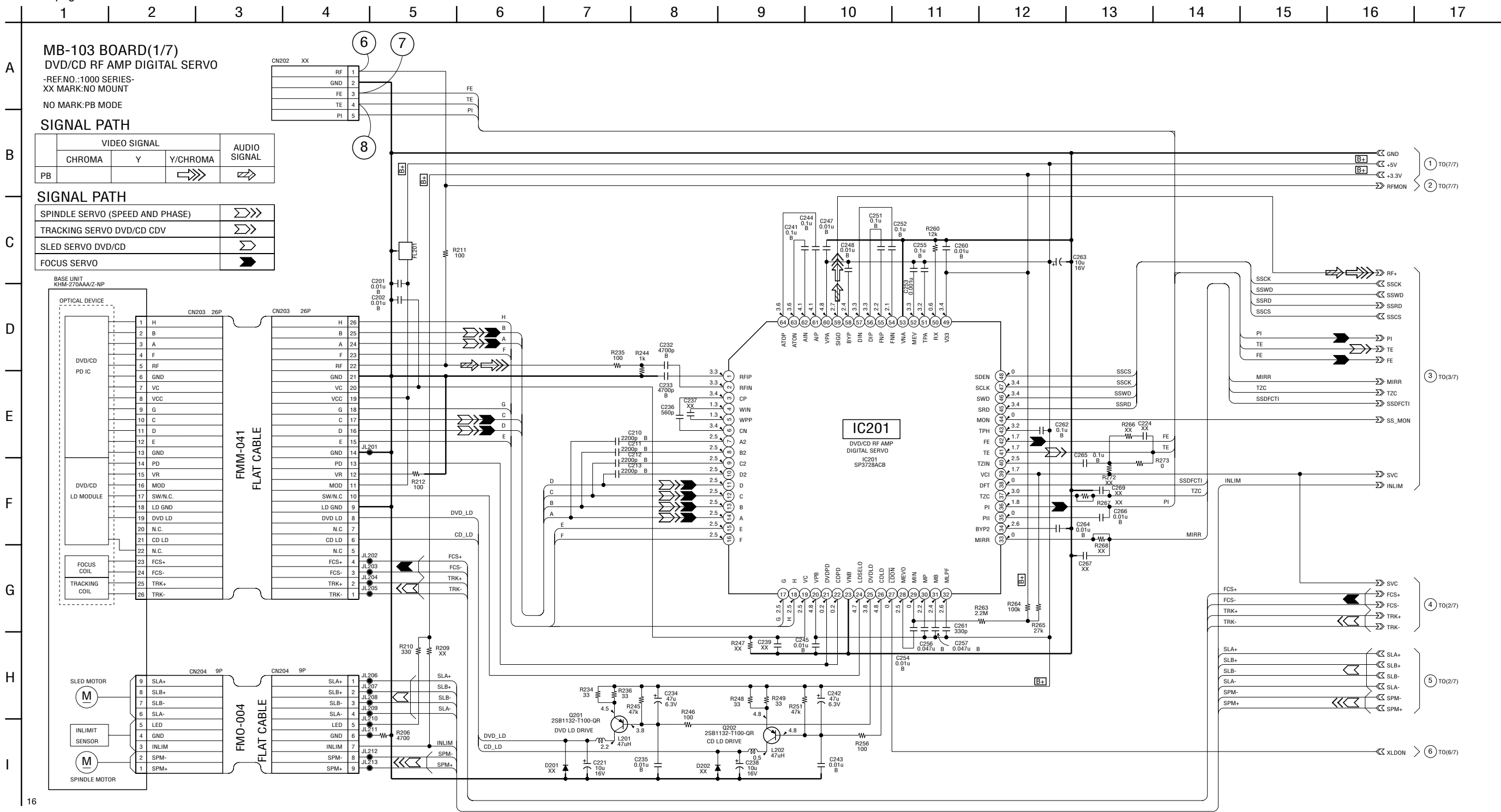
MB-103 BOARD (SIDE B)

IC101	A-1
IC103	B-3
IC106	B-1
IC201	C-4
IC202	B-4
IC303	A-3
IC401	B-2
IC404	C-2
Q201	C-5
Q202	D-5



For Schematic Diagram

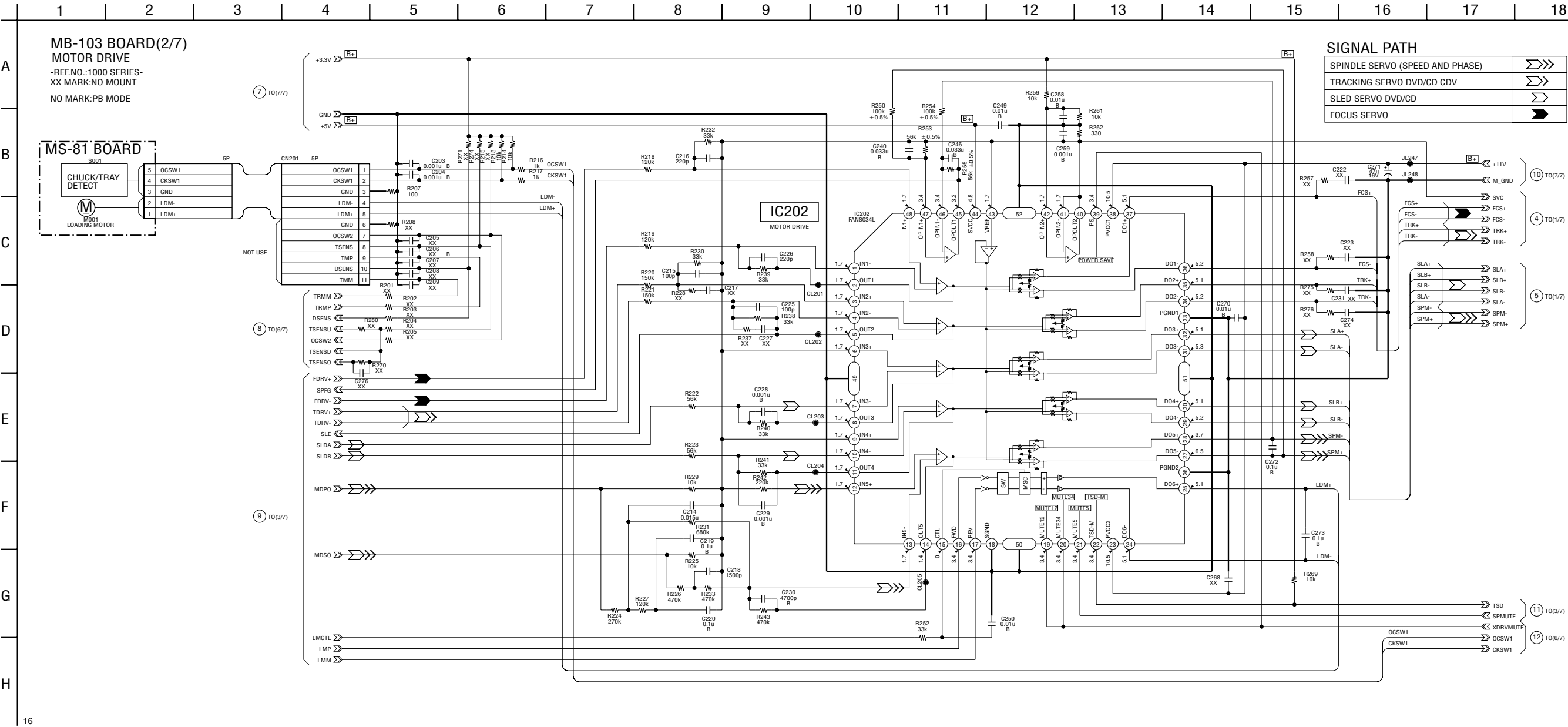
- Refer to page 4-11 for printed wiring board.
- Refer to page 4-5 for waveforms.





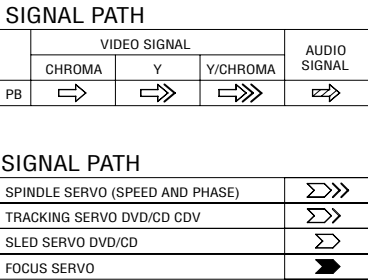
For Schematic Diagram

• Refer to page 4-11 for printed wiring board of MB-103 board.



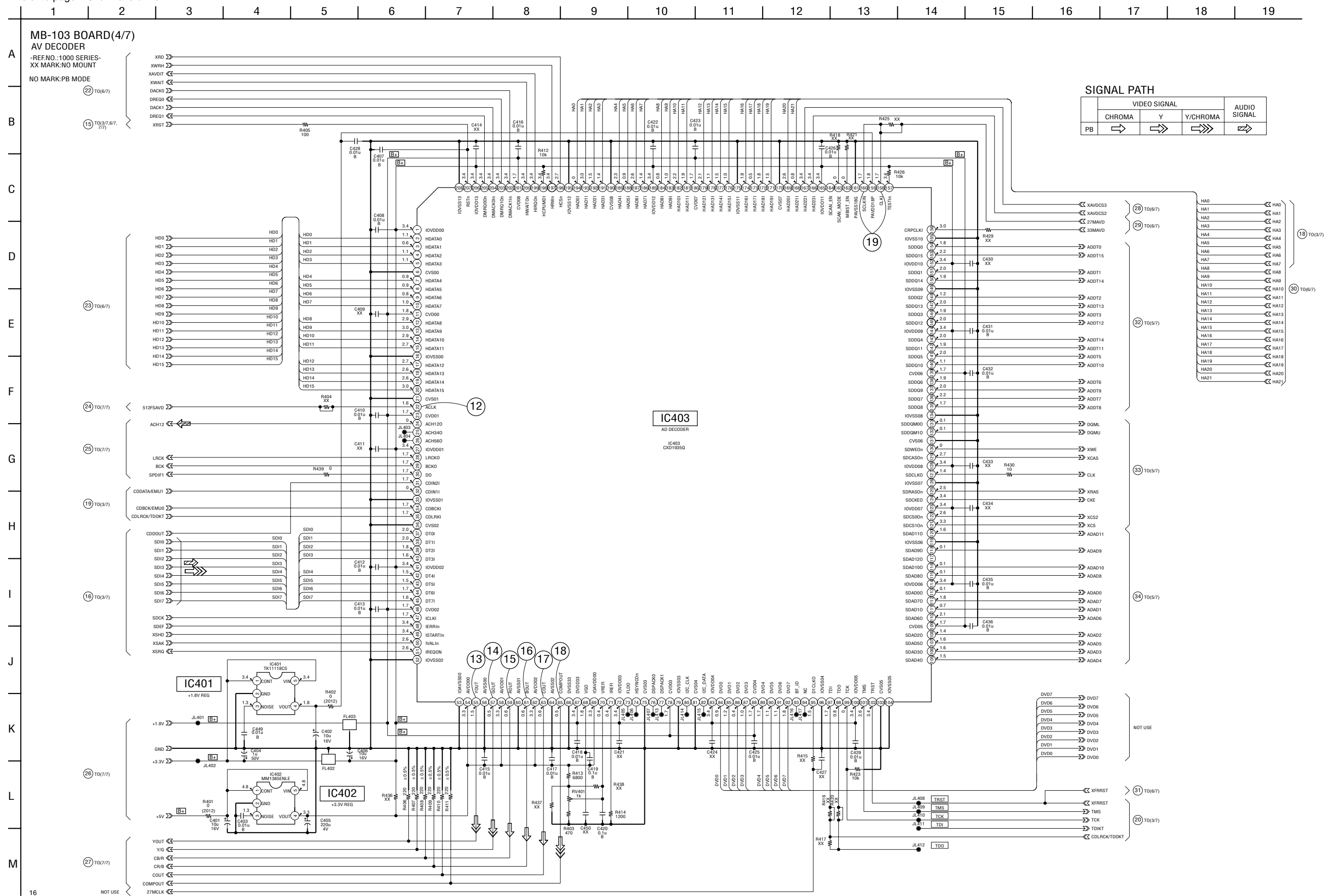
**For Schematic Diagram**

- Refer to page 4-11 for printed wiring board.
- Refer to page 4-5 for waveforms.



**For Schematic Diagram**

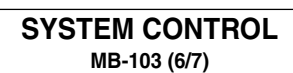
- Refer to page 4-11 for printed wiring board.
- Refer to page 4-5 for waveforms.



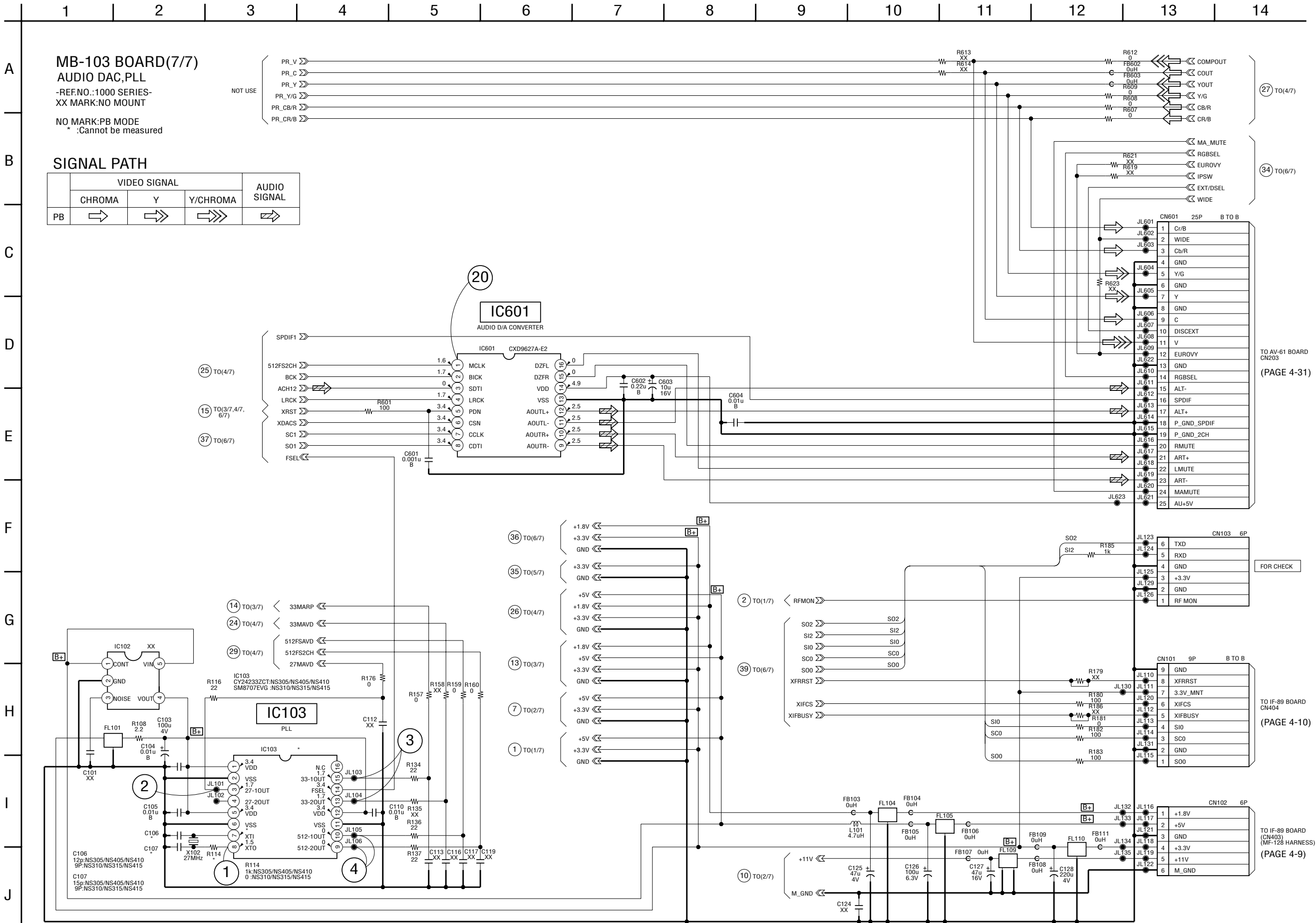
- Refer to page 4-11 for printed wiring board.




## 4-25



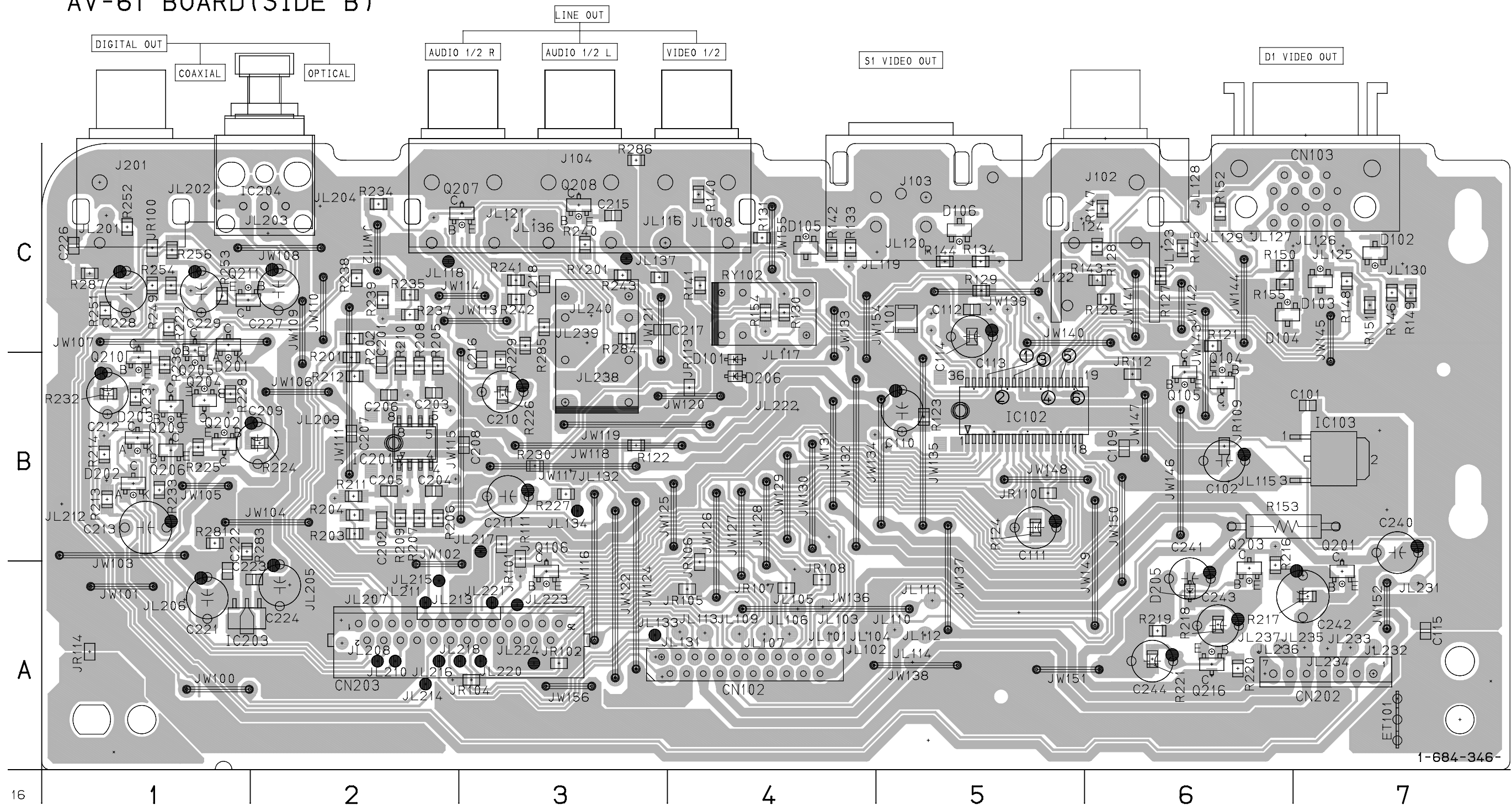
For Schematic Diagram  
• Refer to page 4-11 for printed wiring board.  
• Refer to page 4-5 for waveforms.



## AV-61 (AUDIO OUT, VIDEO OUT) PRINTED WIRING BOARD

-  : Uses unleaded solder.

## AV-61 BOARD (SIDE B)

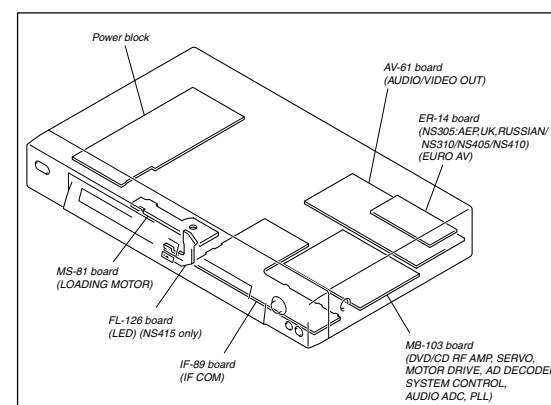


**For printed wiring board**

There are a few cases that the part printed on this diagram isn't mounted in this model.

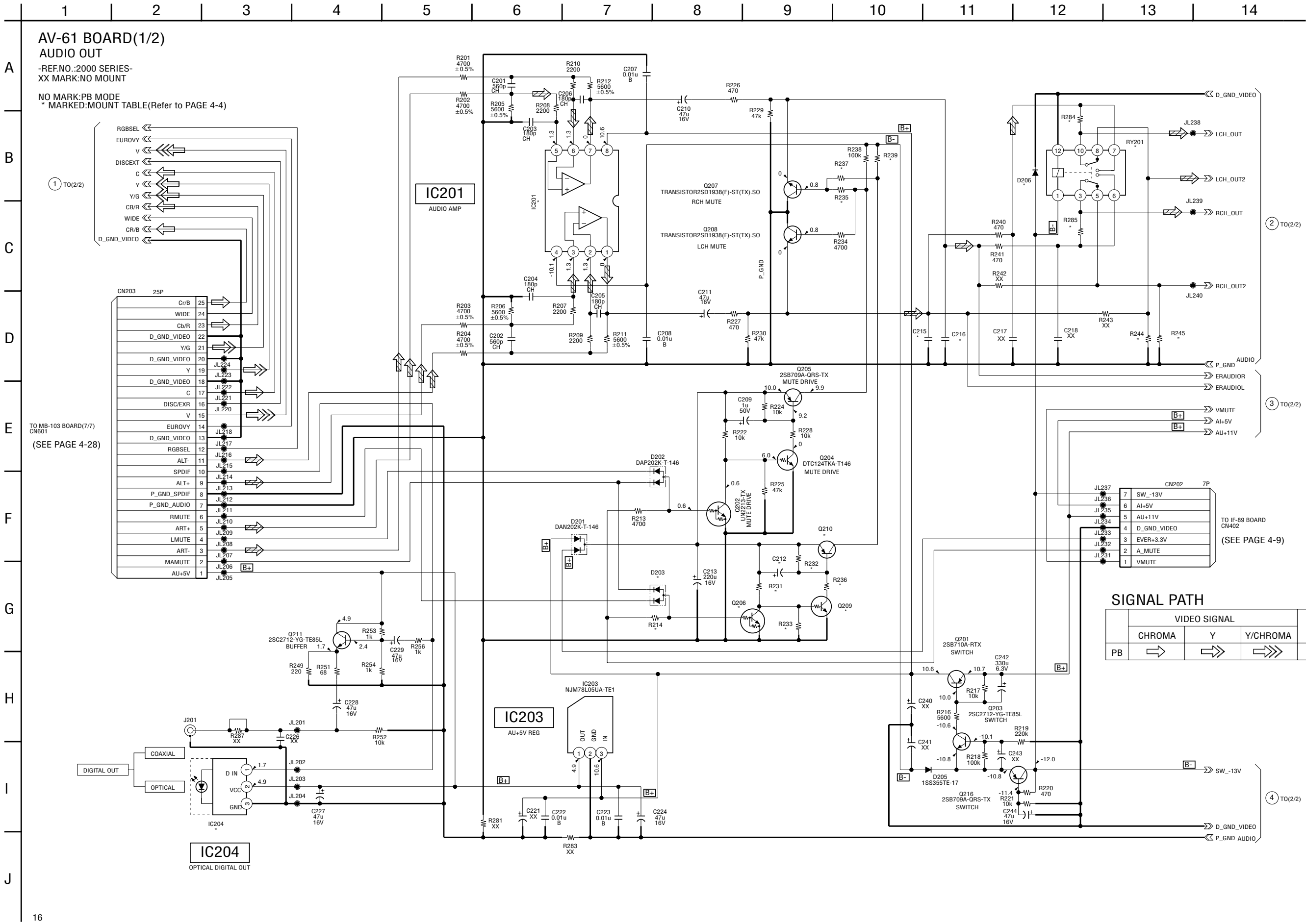
## AV-61 BOARD

CN401	D-8	Q404	D-7
CN402	E-7	Q405	D-8
CN403	D-6		
CN404	B-3	S401	A-1
CN405	B-3	S402	A-2
CN406	D-7	S403	A-2
		S404	A-4
IC403	D-6	S405	A-2
IC404	B-7	S406	A-4
IC405	C-8	S407	A-2
IC406	A-4	S408	A-8
IC407	B-6		



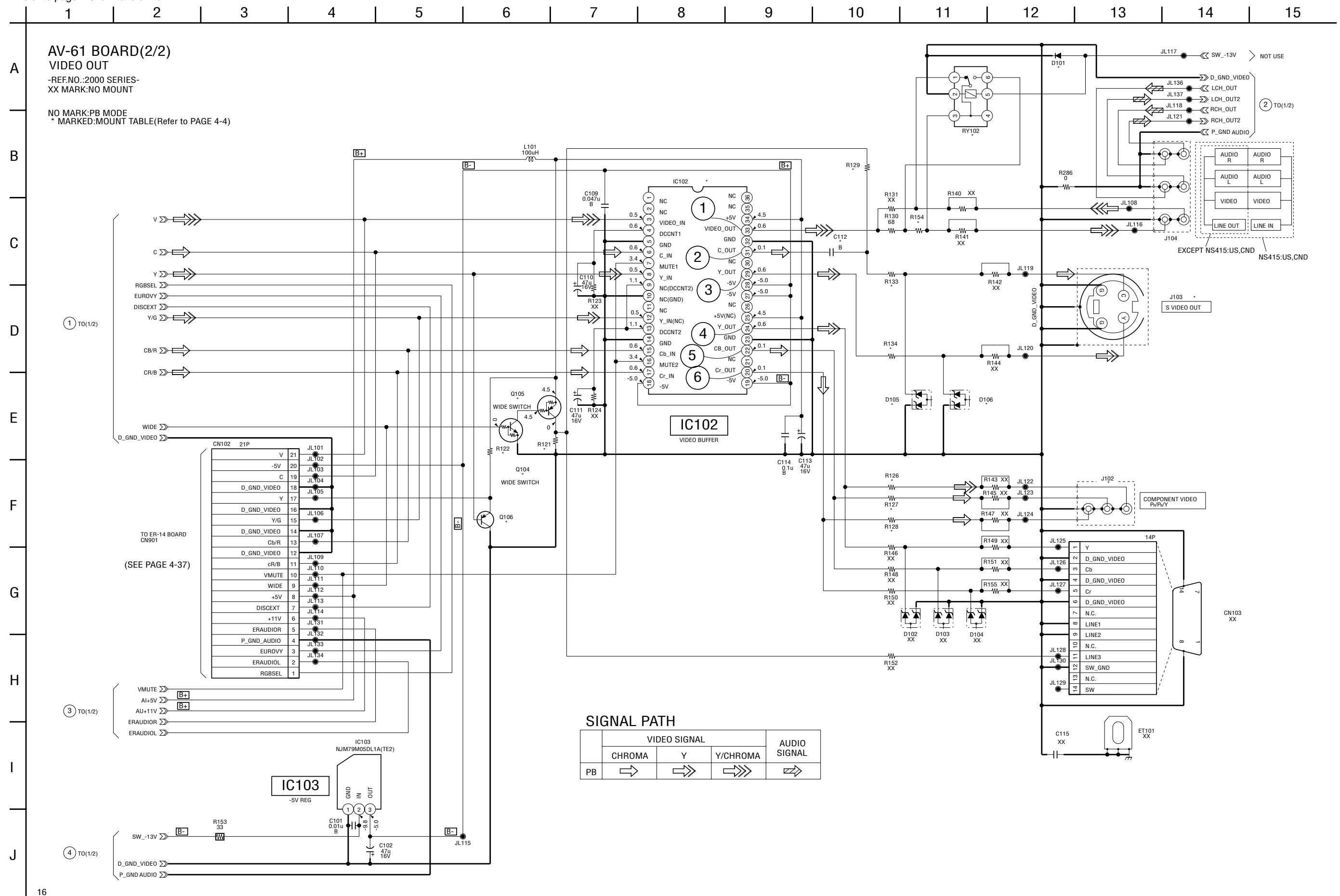


For Schematic Diagram  
• Refer to page 4-29 for printed wiring board.



**For Schematic Diagram**

- Refer to page 4-29 for printed wiring board.
- Refer to page 4-6 for waveforms.



ER-14 BOARD (SIDE B)

31

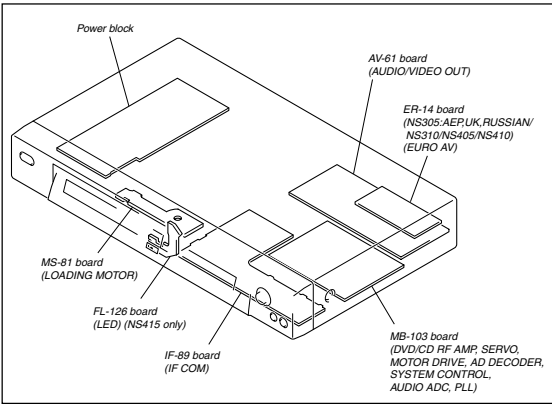
16

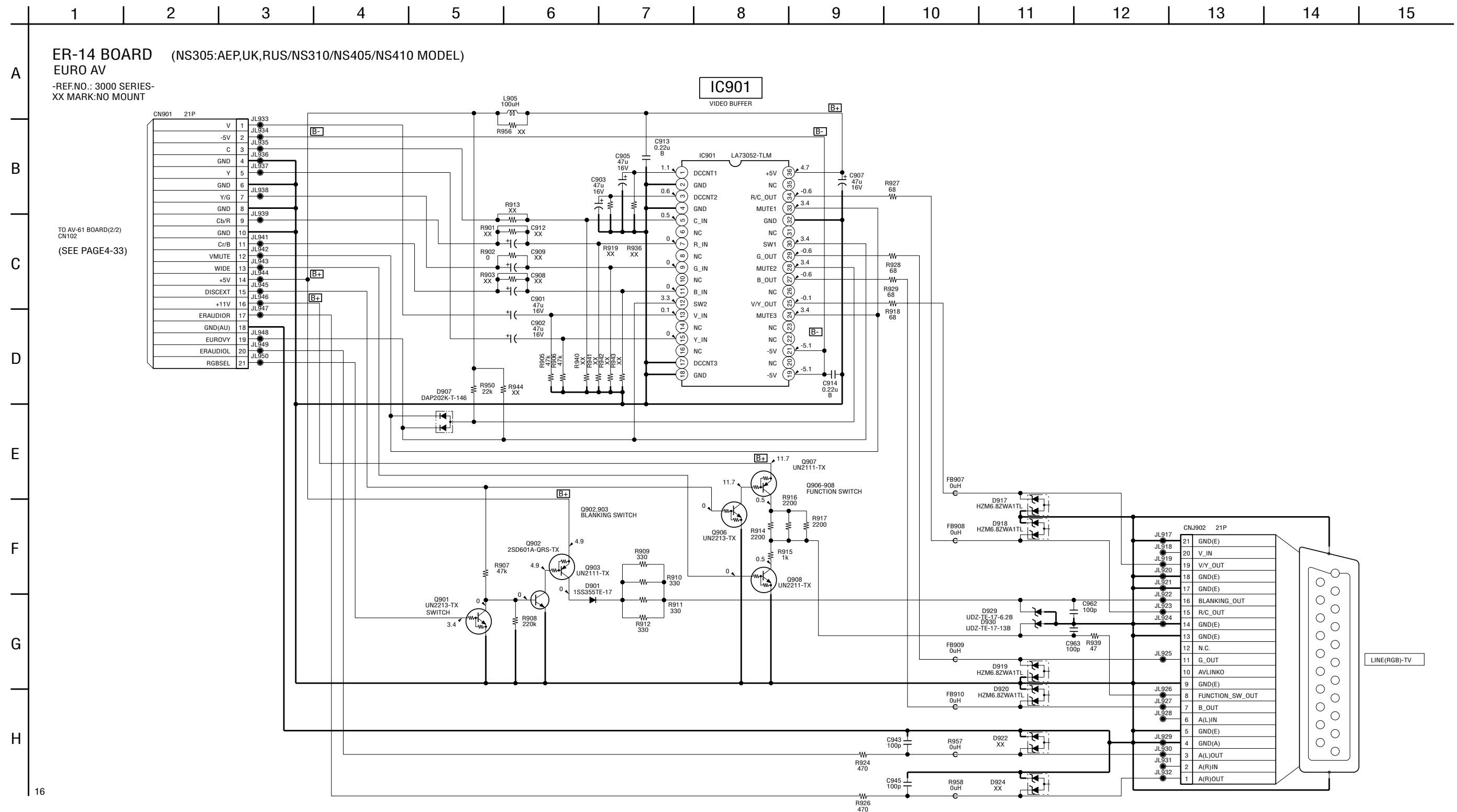
4 3 2 1

A B

There are a few cases that the part printed on this diagram isn't mounted in this model.


CN901	A-1	IC901	A-3
CN902	C-2		
		Q901	A-4
D901	A-4	Q902	A-4
D907	A-4	Q903	A-4
D917	B-3	Q906	A-4
D918	B-3	Q907	B-4
D919	B-2	Q908	B-4
D920	B-2		
D929	B-3		
D930	B-4		

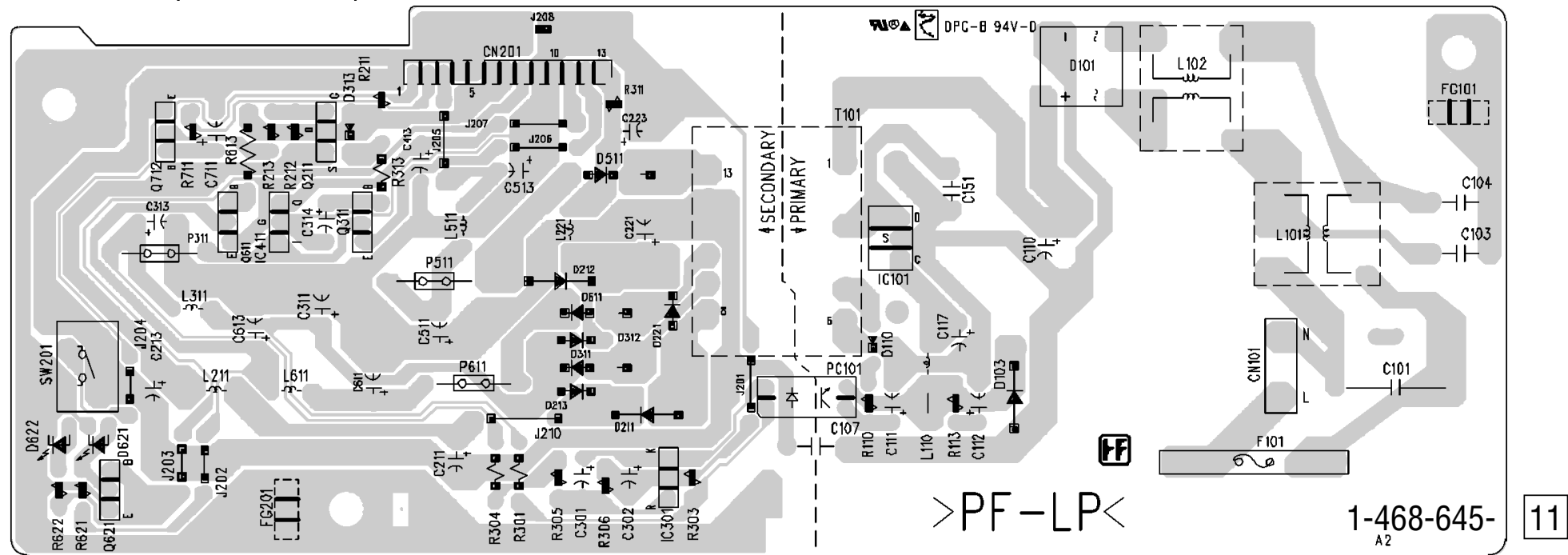




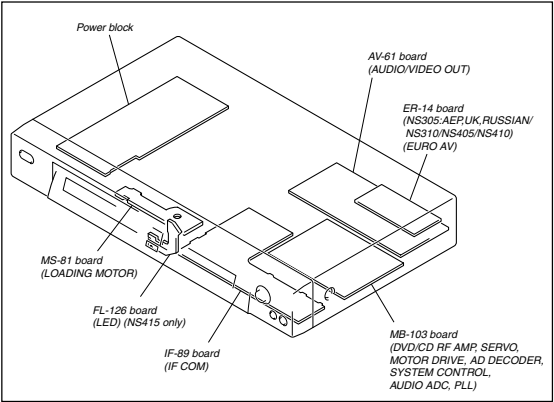
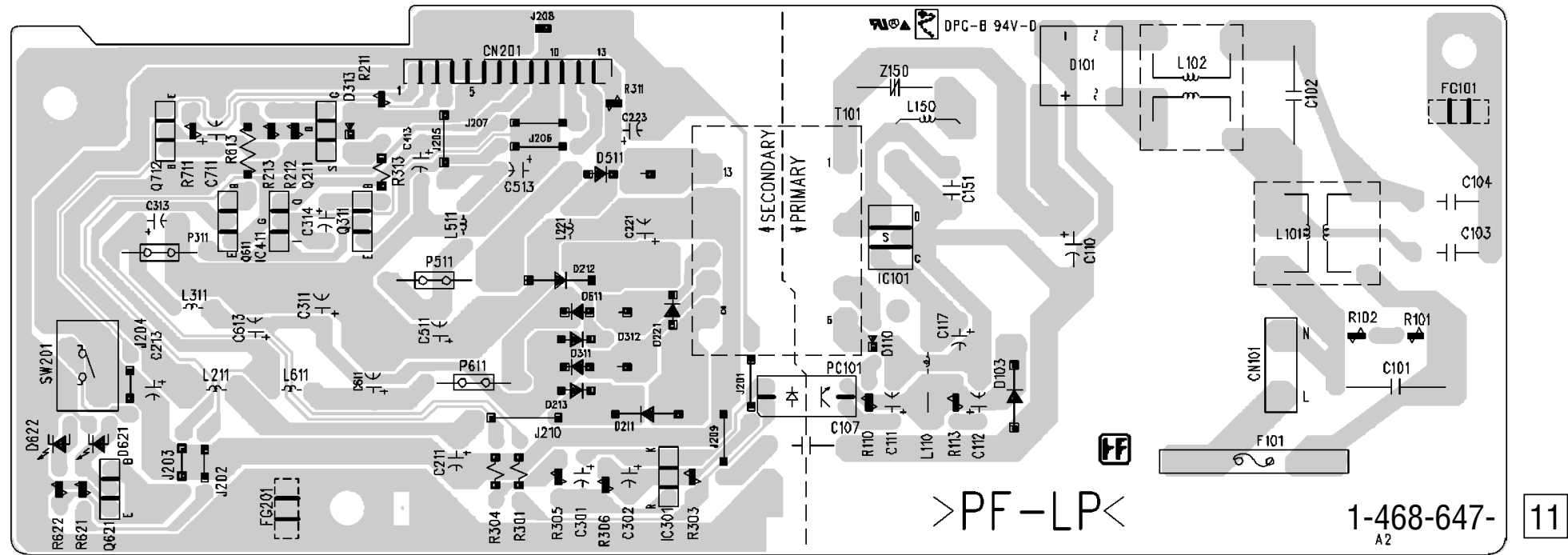
HS11S1U, HS11S1F (SWITCHING REGULATOR) PRINTED WIRING BOARD

POWER BOARD (SW REG)  
(HS11S1U) (NS305: TW/NS315: US,CND,MX/NS415:US,CND)

•  : Uses unleaded solder.




POWER BOARD (SW REG)  
(HS11S1F) (NS315: PX,E,BR)



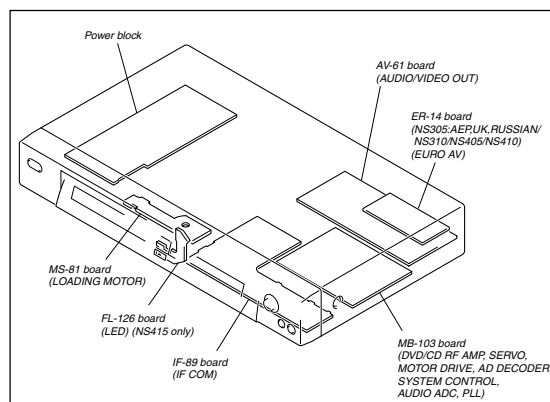
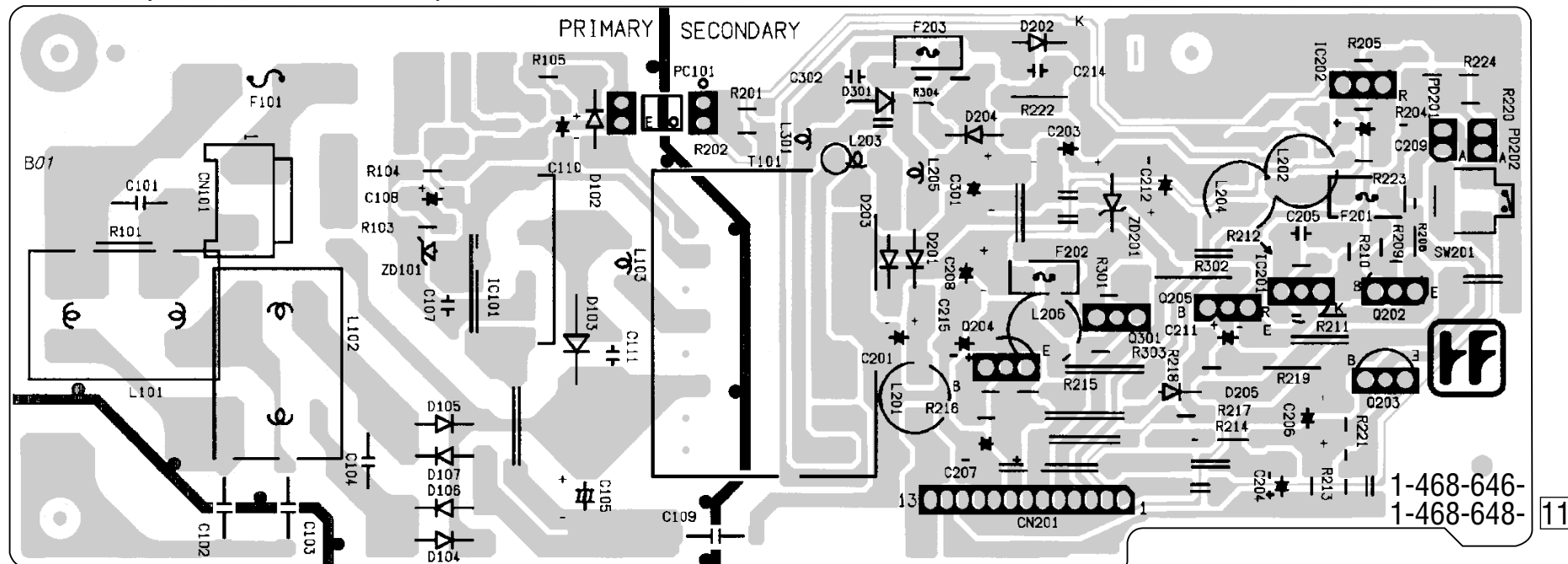
## ETXNY381E2F, ETXNY381N2F (SWITCHING REGULATOR) PRINTED WIRING BOARD

## POWER BOARD (SW REG)

-  : Uses unleaded solder.

(ETXNY381E2F) (NS305: AEP,UK,RUS/NS310/NS405/NS410)

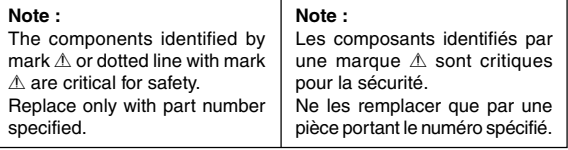
(ETXNY381N2F) (NS305: ME2,EA,ME5,AUS,HK,SP,KR/NS315: AR/NS415: ME2,AUS)



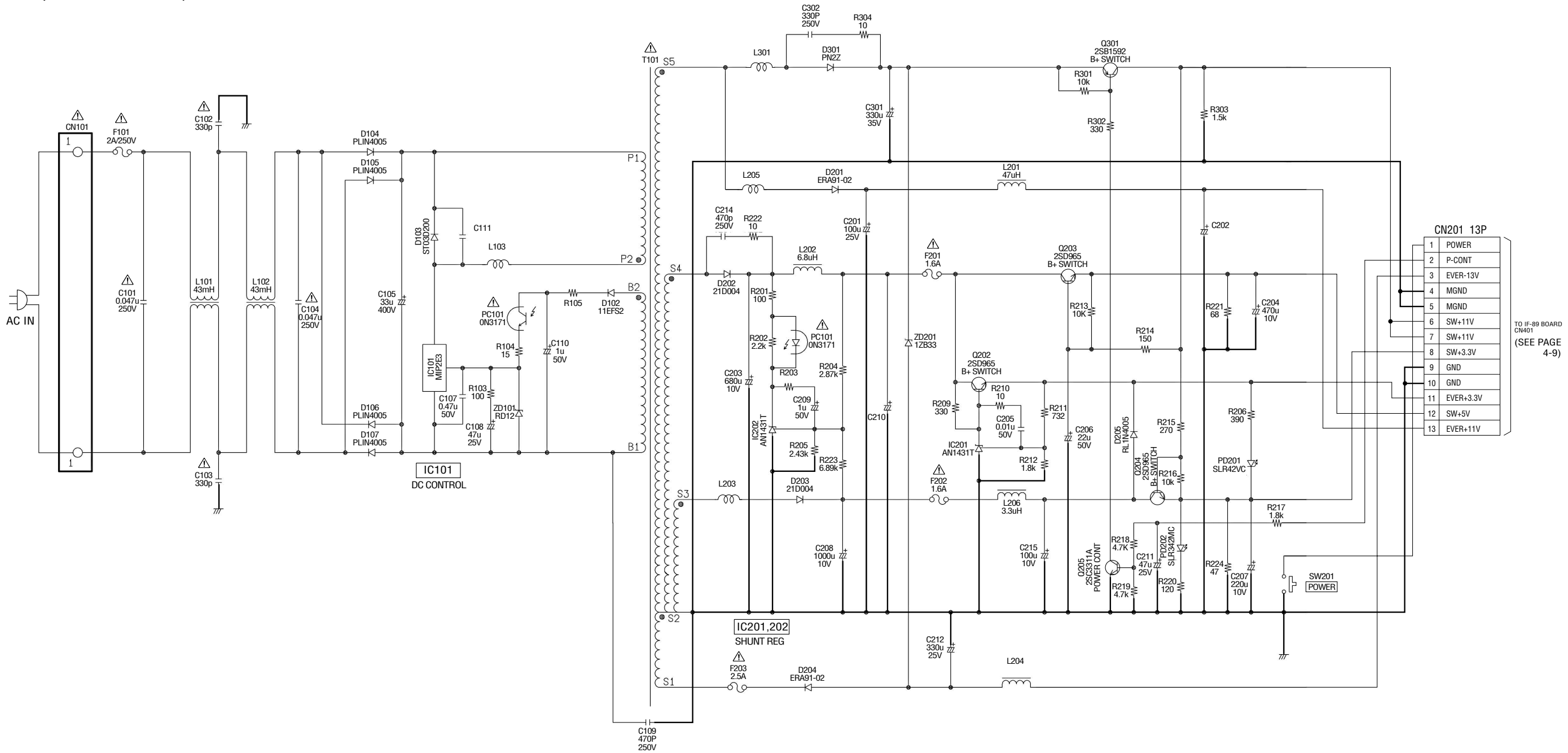
## 4-43

4-44

(HS11S1F) (NS315: PX,E,BR)



SWITCHING REGULATOR  
(ETXNY381N2F) (NS305:ME2,EA,E5,AUS,HK,SP,KR/NS315:AR/NS415:ME2,AUS)  
(ETXNY381E2F) (NS305:AEP,UK,RUS/NS310/NS405/NS410)



**Note :**  
The components identified by mark  $\triangle$  or dotted line with mark  $\triangle$  are critical for safety. Replace only with part number specified.

**Note :**  
Les composants identifiés par une marque  $\triangle$  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.



## MEMO

## SECTION 5

### IC PIN FUNCTION DESCRIPTION

#### 5-1. SYSTEM CONTROL PIN FUNCTION (MB-103 BOARD IC104: MB91307RPFV-G-BND-E1)

Pin No.	Pin Name	I/O	Function
1-5	HA17-HA21	O	Address bus A17 to A21
6	HA22	–	Not used
7	WP	O	I2C EEPROM write protect output
8	XSACS	–	Not used
9	AVCC	–	Power supply (+3.3 V)
10	AVRH	–	Reference power supply (+3.3 V)
11	AVSS	–	GND
12	AN0	I	Set of mode 0
13	AN1	I	Set of mode 1
14	AN2	I	Set of mode 2
15	AN3	I	Set of mode 3 (fixed at “H”)
16	INT0	I	AV DEC Interrupt input
17	INT1	I	ARP Interrupt input
18	INT2	I	SDSP Interrupt input
19	INT3	–	Not used
20	INT4	I	IF CON interrupt input
21	INT5	–	Not used
22	INT6	–	Not used
23	INT7	–	Not used
24	VCC	–	Power supply (+3.3 V)
25	SI0	I	Serial bus 0 (data input)
26	SO0	O	Serial bus 0 (data output)
27	SC0	O	Serial bus 0 (clock output)
28	SI1	–	Not used
29	SO1	O	Serial bus 1 (data output)
30	SC1	O	Serial bus 1 (clock output)
31	SI2	I	Serial bus 2 (data input)
32	SO2	O	Serial bus 2 (data output)
33	DSSENS	–	Not used
34	VSS	–	GND
35	XRST	O	System reset signal output
36	XARPRST	O	WIDE select signal output
37	RGBSEL	O	Video select signal output
38	SDA	I/O	I2C data input/output
39	SCL	O	I2C clock output
40	TRM +	–	Not used
41	EUROV/Y	O	Video select signal output
42	EXT/DSEL	O	Line input select signal output
43	MD0	I	Input of mode select 0 (fixed at “H”)
44	MD1	I	Input of mode select 1 (fixed at “L”)
45	MD2	I	Input of mode select 2 (fixed at “L”)
46	DREQ0	I	Input of DMA-REQ 0 from AV DEC
47	DACK0	O	Output of DMA-ACK 0 to AV DEC
48	XDRVMUTE	O	Drive mute signal output
49	DREQ1	I	AV DEC DMA-REQ 1 input
50	DACK1	O	AV DEC DMA-ACK 1 output
51	XIFCS	O	IF CON chip select signal output
52	VSS	–	GND
53	X1	O	Clock output (16.5 MHz)
54	X0	I	Clock input (16.5 MHz)

Pin No.	Pin Name	I/O	Function
55	VCC	–	Power supply (+3.3 V)
56	CKSW1	I	Chuck sensor input
57	OCSW1	I	Tray sensor input
58	CS0X	O	Chip select signal output (for external ROM)
59	CS1X	–	Not used
60	CS2X	O	AV DEC chip select signal output
61	CS3X	O	AV DEC chip select signal output
62	CS4X	O	ARP chip select signal output
63	CS5X	O	SDSP chip select signal output
64	VCCI	–	Power supply (+1.8 V)
65	CS6X	–	Not used
66	CX7X	–	Not used
67	XWAIT	I	Wait signal input
68	BGRNTX	I	Test terminal (fixed at “H”)
69	BRQ	I	Test terminal (fixed at “L”)
70	XRD	O	Read enable signal output
71	XWRH	O	High order byte write enable signal output
72	XWRL	–	Not used
73	NMIX	I	Not used (Fixed at “H”)
74	VCCI	–	Power supply (+1.8 V)
75	VSS	–	GND
76	XFRRST	I	IF CON reset signal input
77	CPUCK	O	CPU clock signal output
78	OCSW2	–	Not used
79	XDACS	O	DAC (2 CH) chip select signal output
80	TRM –	–	Not used
81	48/44.1K	O	PLL FS control signal output
82	WIDE	O	LD mute signal output
83	MAMUTE	O	Audio mute signal output
84	SRAMWE	–	Not used
85-92	HD0-HD7	I/O	Data bus D0 to D7 (16 bits only)
93-100	HD8-HD15	I/O	Data bus D8 to D15 (16 bits) and D0 - D7 (8 bits)
101	VSS	–	GND
102-109	HA0-HA7	O	Address bus A00 to A07
110	VCC	–	Power supply (+3.3 V)
111-118	HA8-HA15	O	Address bus A08 to A15
119	VSS	–	GND
120	HA16	O	Address bus A16

## SECTION 6

### TEST MODE

#### 6-1. GENERAL DESCRIPTION

The Test Mode allows you to make diagnosis and adjustment easily using the remote commander and monitor TV. The instructions, diagnostic results, etc. are given on the on-screen display (OSD).

#### 6-2. STARTING TEST MODE

Press the [TOP MENU], [CLEAR], [POWER] keys on the remote commander in this order with the power of main unit in OFF status, and the Test Mode starts, then "DIAG START" will be displayed on the fluorescent display tube and the menu shown below will be displayed on the TV screen. At the bottom of menu screen, the model name and revision number are displayed. Last Off at the lower right of screen indicates the information code concerning the last power off. To execute each function, select the desired menu and press its number on the remote commander. To exit from the Test Mode, press the [POWER] key.

```

Test Mode Menu

0. Syscon Diagnosis
1. Drive Auto Adjustment
2. Drive Manual Operation
3. Mecha Aging
4. Emargency History
5. Version Information
6. Video Level Adjustment
                                Exit: Power Key
-
Model      : DPX-16xxxx
Revision   : x.xxx   Last Off: xx

```

#### Power Off Information Code List

- 00: Primary Power Off
- 01: Power Off Request from SYSTEM CONTROL
- 02: Power Off by Emergency Power Off Command from SYSTEM CONTROL  
(if information is sent from SYSTEM CONTROL)
- 03: IF CON Judged that SYSTEM CONTROL is Faulty
- 04: Power Off from Diagnosis Mode of IF CON
- 05: Forced Power Off by the User
- 06: Power Off by Power Supply Voltage Monitor

#### 6-3. SYSCON DIAGNOSIS

The same contents as board detail check by serial interface can be checked from the remote commander. On the Test Mode Menu screen, press [0] key on the remote commander, and the following check menu will be displayed.

```

### Syscon Diagnosis ###
                        Check Menu

0. Quit
1. All
2. Version
3. Peripheral
4. Servo
5. Supply
6. AV Decoder
7. Video
8. Audio
-

```

#### 0. (Quit)

Quit the Syscon Diagnosis and return to the Test Mode Menu.

#### 1. (All items continuous check)

This menu checks all diagnostic items continuously. Normally, all items are checked successively one after another automatically unless an error is found, but at a certain item that requires judgment through a visual check to the result, the following screen is displayed for the key entry.

```

### Syscon Diagnosis ###

                        Diag All Check
                        No. 2 Version

2-3. ROM Check Sum
Check Sum = 2005

Press NEXT Key to Continue
Press PREV key to Repeat
-

```

For the ROM Check, the check sum calculated by the Syscon is output, and therefore you must compare it with the specified value for confirmation.

Following the message, press [▶▶] key to go to the next item, or [◀◀] key to repeat the same check again.

To quit the diagnosis and return to the Check Menu screen, press **[F4]** or **[ENTER]** key. If an error occurred, the diagnosis is suspended and the error code is displayed as shown below.

```

### Syscon Diagnosis ###

3-2. EEPROM Check
Error 03: EEPROM Write/Read N
Address      : 00000001
Write Data   : 2492
Read Data    : 2490
Press NEXT Key to Continue
Press PREV key to Repeat
—

```

Press **[F4]** key to quit the diagnosis, or **[F2]** key to repeat the same item where an error occurred, or **[F3]** key to continue the check from the item next to faulty item.

Selecting **[2]** and subsequent items call the submenu screen of each item. When “———” is displayed in the submenu, it means that the test is not supported in the model.

For example, if “5. Supply” is selected, the following submenu will be displayed.

```

### Syscon Diagnosis ###
      Check Menu
      No. 5 Supply

0. Quit
1. All
2. ARP Register Check
3. ARP to RAM Data Bus
4. ARP to RAM Address Bus
5. ARP RAM Check
—

```

## 0. (Quit)

Quit the submenu and return to the main menu.

## 1. (All submenu items continuous check.)

This menu checks 2 and subsequent items successively. At the item where visual check is required for judgment or an error occurred, the checking is suspended and the message is output for key entry. Normally, all items are checked successively one after another automatically unless an error is found.

Selecting **[2]** and subsequent items executes respective menus and outputs the results.

For the contents of each submenu, see “General Description of Checking Method” and “Check Items List”.

## General Description of Checking Method

### 2. Version

#### (2-2) Revision

ROM revision number is displayed.

Error: Not detected.

The revision number defined in the source file is displayed with four digits.

#### (2-3) ROM Check Sum

Check sum is calculated.

Error: Not detected.

8-bit data are added up to the ROM address 0x000F0000 to 0x002EFFFF, and the result is displayed with 4-digit hexadecimal number. Error is not detected. Compare the result with the specified value.

#### (2-4) Model Type

Model code is displayed.

Error: Not detected.

The model code read from the EEPROM is displayed with 2-digit hexadecimal number.

#### (2-5) Region

Region code is displayed.

Error: Not detected.

The region code determined from the model code is displayed.

#### (2-6) M't Check

Mount resistance is checked.

Error 22: The region code does not accord.

Check whether the region code that is deduced from model resistance and destination resistance accords with the region code that is deduced from region resistance value.

## 3. Peripheral

#### (3-2) EEPROM Check

Data write → read, and accord check

Error 03: EEPROM write/read discord

0x9249, 0x2942 and 0x4294 are written to the address 0x00 to 0xFF of the EEPROM and then read for checking. Before writing, the data are saved, then after checking, they are written to restore the contents of EEPROM.

## 4. Servo

- (4-2) Servo DSP Check  
Data write → read, and accord check  
Error 12: Read data discord  
0x9249, 0x2942 and 0x4294 are written to the RAM address 0x602 of the Servo DSP and then read for checking.
- (4-3) \_\_\_\_\_  
Check no support.
- (4-4) RF Amp Register Check  
Data write → read, and accord check  
Error 13: RF Amp register write, and read data discord  
Implement 8-bit shift operation of the 0x01 to the readable/writable register of the RF Amp. If once write data do not accord with read data, it is NG.

## 5. Data Supply System

- (5-2) ARP Register Check  
Data write → read, and accord check  
Error 08: ARP register write, and read data discord  
Data 0x00 to 0xFF is written sequentially to the ARP TMAX register (address 0xC6) and then read for checking.
- (5-3) ARP to RAM Data Bus  
Data write → read, and accord check  
Error 09: ARP ↔ RAM data bus error  
Data 0x0001 to 0x8000 where one bit each is set to 1 are written to the address 0 of RAM (IC303) connected to the ARP (IC302) through the bus, then they are read and checked. In case of discord, written bit pattern and read data are displayed. If data where multiple bits are 1 are read, the bits concerned may touch each other. Further, if data where certain bit is always 1 or 0 regardless of written data, the line could be disconnected or shorted.

- (5-4) ARP to RAM Address Bus  
Data write → other address read discord check  
Error 10: ARP ↔ RAM address bus error  
Caution: Address and data display in case of an error is different from the display of other diagnosis (described later).  
Before starting the test, all addresses of RAM (IC303) are cleared to 0x0000.  
First, 0xA55A is written to the address 0x00000, and the address data are read and checked from addresses 0x00001 to 0x80000 while shifting 1 bit each. Next, the data at that address is cleared, and it is written to the address 0x00001, and read and checked in the same manner. This check is repeated up to the address 0x80000 while shifting the address data by 1 bit each.  
If data other than 0 is read at the addresses except written address, an error is given because all addresses were already cleared to 0. In this check, the error display pattern is different from that of other diagnosis; read data, written address, and read address are displayed in this order. However, the message uses same template, and accordingly exchange Address and Data when reading. The following display, for example,

```
### Syscon Diagnosis ###

5-4. ARP to RAM Address Bus
Error 10: ARP - RAM Address B
Address      : 0000A55A
Write Data   : 00000000
Read Data    : 00080000
Press NEXT Key to Continue
Press PREV key to Repeat
—
```

shows the data 0xA55A was read from address 0x00080000 though it was written to the address 0x00000000. This implies that these addresses are in the form of shadow. Also, if the read data is not 0xA55A, another error will be present.

- (5-5) ARP RAM Check  
Data write → read, and accord check  
Error 11: ARP RAM read data discord  
The program code data stored in ROM are copied to all areas of RAM (IC303) connected to the ARP through the bus, then they are read and checked if they accord. If the detail check was selected initially, the data are written to all areas and read, then the same test is conducted once again with the data where all bits are inverted between 1 and 0. If discord is detected, faulty address, written data, and read data are displayed following the error code 11, and the test is suspended.

## 6. AV Decoder

### (6-2) 1935 RAM

Data write → read, and accord check

Error 14: AVD RAM read data discord

The program code data stored in ROM (IC107) are copied to all areas of RAM (IC504, IC505) connected to the AVD through the bus, then they are read and checked if they accord. Further, the same test is conducted once again with the data where all bits are inverted between 1 and 0. If discord is detected, faulty address, written data, and read data are displayed following the error code 14, and the test is suspended.

During the test, OSD display becomes blank as the OSD area is also checked.

### (6-3) 1935 SP

ROM → AVD RAM → Video OUT

Error: Not detected.

The data including sub picture streams in ROM are transferred to the RAM in AVD, and output as video signals from the AVD.

Though OSD display becomes blank, the output of video signals continues until the key is pressed.

## 7. Video Output

### (7-2) Color Bar

AVD color bar command write → Video OUT

Error: Not detected.

The command is transferred to the AVD, and the color bar signals are output from video terminals.

### (7-3) Composite Out (European model only)

EURO-AV video output check

AVD color bar command write → Video (EURO-AV) OUT

Error: Not detected.

With the component of video output turned off, the color bar signals are output from the EURO-AV terminal.

This check is performed for European model only.

### (7-4) Y/C Out (European model only)

Y/C video output check

AVD color bar command write → Video (Y/C) OUT

Error: Not detected.

With the Y/C of video output turned on, the color bar signals are output.

This check is performed for European model only.

### (7-5) RGB Out (European model only)

RGB video output check

AVD color bar command write → Video (RGB) OUT

Error: Not detected.

With the RGB of video output turned on, the color bar signals are output.

This check is performed for European model only.

### (7-6) Component Out (European model only)

Component video output check

AVD color bar command write → Video (Component) OUT

Error: Not detected.

With the component of video output turned on, the color bar signals are output.

This check is performed for European model only.

### (7-7) Euro AV Through (European model only)

AV Through output On/Off

Error: Not detected.

AV Through output is turned on.

This check is performed for European model only.

## 8. Audio Output

### (8-2) ARP → 1935

Data flow from supply system DRAM to SDRAM of AV Decoder is tested.

Error 15: ARP → 1935 video NG

16: ARP → 1935 audio NG

### (8-3) Test Tone

Pink noise output

Error: Not detected.

In the models without DD output, the test tone is output from L and R of 2-channel only, and in the models with DD output, the test tone is output from L and R of 2-channel, and all channels of 5.1 output.

After turning on all outputs, each time the **[NEXT]** key is pressed, the output channel is switched for individual channel checking.

## Diagnosis Check Items List

### 2. Version Display

(2-2) Revision

(2-3) ROM Check Sum

(2-4) Model Type

(2-5) Region

(2-6) M't Check

### 3. Peripheral

(3-2) EEPROM Check

(3-7) ————— (Function not supported)

### 4. Servo

(4-2) Servo DSP Check

(4-3) ————— (Function not supported)

(4-4) RF Amp Register Check

### 5. Data Supply System

(5-2) ARP Register Check

(5-3) ARP to RAM Data Bus

(5-4) ARP to RAM Address Bus

(5-5) ARP RAM Check

### 6. AV Decoder

(6-2) 1935 RAM

(6-3) 1935 SP

### 7. Video Output

(7-2) Color Bar

(7-3) Composite Out (European model only)

(7-4) Y/C Out (European model only)

(7-5) RGB Out (European model only)

(7-6) Component Out (European model only)

(7-7) Euro AV Through (European model only)

### 8. Audio Output

(8-2) ARP → 1935

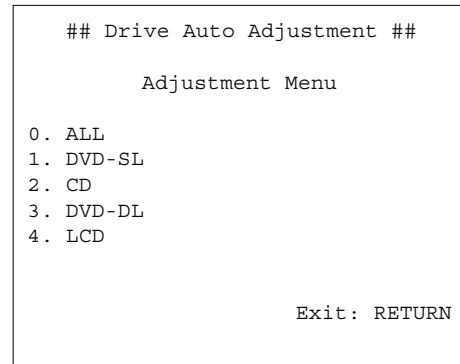
(8-3) Test Tone

### Error Codes List

- 00: Error not detected
- 01: RAM write/read data discord
- 03: EEPROM NG
- 04: Flash memory clear error
- 05: Flash memory write error
- 06: Flash memory read data discord
- 08: ARP register read data discord
- 09: ARP  $\longleftrightarrow$  RAM data bus error
- 10: ARP  $\longleftrightarrow$  RAM address bus error
- 11: ARP RAM read data discord
- 12: Servo DSP NG
- 13: RF Amp NG
- 14: 1935 SDRAM NG
- 15: ARP  $\rightarrow$  1935 video NG
- 16: ARP  $\rightarrow$  1935 audio NG
- 1A: System call error (Function not supported)
- 1B: System call error (Parameter error)
- 1C: System call error (Illegal ID number)
- 20: System call error (Time out)
- 22: Resistor installation error
- 90: Error occurred
- 91: User verification NG
- 92: Diagnosis cancelled

## 6-4. DRIVE AUTO ADJUSTMENT

On the Test Mode Menu screen, press [1] key on the remote commander, and the drive auto adjustment menu will be displayed.



Normally, [0] is selected to adjust DVD (single layer), CD, and DVD (dual layer) in this order. But, individual items can be adjusted for the case where adjustment is suspended due to an error. In this mode, the adjustment can be made easily through the operation following the message displayed on the screen. Which disc is currently adjusted is displayed on the fluorescent display tube.

### 0. ALL

You will be asked if EEPROM data are initialized or not, and for this prompt, select [0] and press the [ENTER] key. First, the servo setting data in EEPROM, Emergency History and Hour Meter are cleared to initialize. Then, [1] DVD-SL disc, [2] CD disc, and [3] DVD-DL disc are adjusted in this order. Each time one disc was adjusted, it is ejected, and therefore exchange the disc following the message. You can exit the adjustment by pressing the [■] button. In adjusting each disc, the mirror time is measured to check the disk type. In the auto adjustment, whether the disc type is correct is not checked unlike conventional models, and accordingly, take care not to insert a different type of disc.



### 1. DVD Single Layer Disc

Select [1], insert DVD single layer disc, and press [ENTER] key, and the adjustment will be made through the following steps, then adjusted values will be written to the EEPROM.

#### DVD Single Layer Disc Adjustment Steps

1. Sled Reset
2. Disc Check Memory SL
3. Set Disc Type SL
4. Spdl Start
5. Ld ON
6. Focus Error Check
7. Focus ON 0 with PI Level measure
8. Auto Track Offset Adjust L0
9. Trv Level Check
10. Tracking ON
11. CLVA ON
12. Sled ON
13. Auto Focus Balance Adjust
14. Auto Loop Filter Offset Adjust
15. Auto Focus Gain Adjust L0
16. Auto Focus Balance Adjust L0
17. EQ Boost Adjust
18. Auto Loop Filter Offset Adjust
19. Auto Tracking Gain Adjust
20. RF Level Measure
21. Jitter measure
22. Eep Copy Loop Filter Offset
23. All Servo Stop

### 2. CD Disc

Select [2], insert CD disc, and press [ENTER] key, and the adjustment will be made through the following steps, then adjusted values will be written to the EEPROM.

#### CD Adjustment Steps

1. Sled Reset
2. Disc Check Memory CD
3. Set Disc Type CD
4. Spdl Start
5. LD ON
6. Focus Error Check
7. Fcs ON 1 with PI Level measure
8. Auto Track Offset Adjust L0
9. Trv Level Check
10. Tracking ON
11. CLVA ON
12. Sled ON
13. Auto Focus Balance Adjust
14. Auto Loop Filter Offset Adjust
15. Auto Focus Gain Adjust L0
16. Auto Focus Balance Adjust L0
17. Eq Boost Adjust
18. Auto Loop Filter Offset Adjust
19. Auto Track Gain Adjust
20. Copy Adjustment Data to LCD
21. RF Level Measure
22. Jitter measure
23. All Servo Stop

### 3. DVD Dual Layer Disc

Select [3], insert DVD dual layer disc, and press [ENTER] key, and the adjustment will be made through the following steps, then adjusted values will be written to the EEPROM.

#### DVD Dual Layer Disc Adjustment Steps

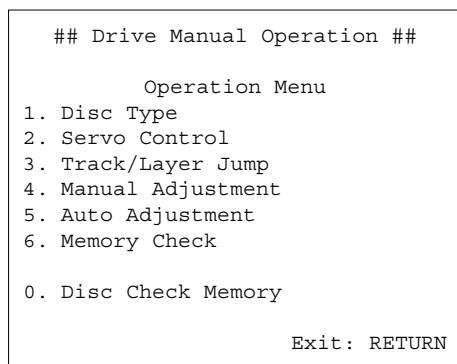
1. Sled Reset
2. Disc Check Memory DL
3. Set Disc Type DL  
DVD DL Layer 1 Adjust
4. Spdl Start
5. LD ON
6. Fcs ON 1 with PI Level measure
7. Auto Track Offset Adjust L1
8. Tracking ON
9. Clva ON
10. Sled ON
11. Auto Focus Balance Adjust
12. Auto Focus Gain Adjust L1
13. Auto Focus Balance Adjust L1
14. Eq Boost Adjust L1
15. Auto Track Gain Adjust L1
16. Jitter measure  
DVD DL Layer 0 Adjust
17. Focus Jump (L1 → L0)
18. Auto Track Offset Adjust L0
19. Tracking ON
20. Clva ON
21. Sled ON
22. Auto Focus Balance Adjust
23. Auto Focus Gain Adjust L0
24. Auto Focus Balance Adjust
25. Eq Boost Adjust L0
26. Auto Track Gain Adjust L0
27. Jitter measure
28. All Servo Stop

### 4. LCD

LCD disc is not adjusted because the adjusted data of CD are reflected, and SACD (hybrid disc) is not adjusted because the adjusted data of CD and DVD-DL are reflected.

## 6-5. DRIVE MANUAL OPERATION

On the Test Mode Menu screen, select [2], and the manual operation menu will be displayed. For the manual operation, each servo on/off control and adjustment can be executed manually.



In using the Manual Operation menu, take care of the following points. These commands do not provide protection, thus requiring correct operation. The sector address or time code field is displayed when a disc is loaded.

1. Set correctly the disc type to be used on the Disc Type setting screen.  
The Disc Type setting must be performed after a disc was loaded.  
The set Disc Type is cleared when the tray is opened.
2. After power ON, if the Manual Operation was selected, first perform "Reset SLED TILT" by opening 1. Disc Type screen.
3. In case of an alarm, immediately press the [STOP] button to stop the servo operation, and turn the power OFF.

Basic operation (controllable from front panel or remote commander)

[POWER] : Power OFF

[STOP] : Servo stop

[Open/Close] (Open/Close) : Stop+Eject/Loading

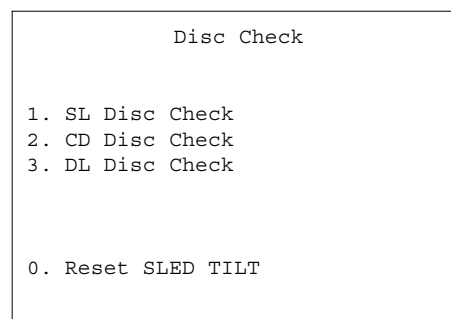
[Return] : Return to Operation Menu or Test Mode Menu

[Right/Left] : Transition between sub modes of menu

[1] to [9], [0] : Selection of menu and items

Cursor [Up/Down] : Increase/Decrease in manually adjusted value

## 0. Disc Check Memory

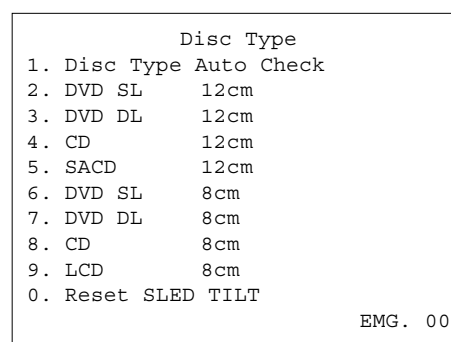


On this screen, the mirror time is measured and written to the EEPROM to check the disc type. First, set a DVD SL disc and press [1], then set a CD disc and press [2], and finally set a DVD DL disc and press [3]. The measured mirror time is displayed respectively.

The adjustment must be executed more than once after default data were written.

From this screen, you can go to another mode by pressing [Right/Left] or [Left/Right] key, but you cannot enter this mode from another mode. You can enter this mode from the Operation Menu screen only.

## 1. Disc Type



On this screen, select the disc type. To select the disc type, press the number of the loaded disc. The selected disc type is displayed at the bottom. Selecting [1] automatically selects and displays the disc type. In case of wrong display, retry "Disc Check Memory". Also, opening the tray causes the set disc type to be cleared. In this case, set the disc type again after loading.

In performing manual operation, the disc type must be set.

Once the disc type has been selected, the sector address or time code display field will appear as shown below. These values are displayed when PLL is locked.

```

Disc Type
1. Disc Type Auto Check
2. DVD SL 12cm
3. DVD DL 12cm
4. CD 12cm
5. SACD 12cm
6. DVD SL 8cm
7. DVD DL 8cm
8. CD 8cm
9. LCD 8cm
0. Reset SLED TILT
SA.-----SI.—EMG.00
DVD SL 12cm

```

Display when DVD SL 12cm disc was selected

```

Disc Type
1. Disc Type Auto Check
2. DVD SL 12cm
3. DVD DL 12cm
4. CD 12cm
5. SACD 12cm
6. DVD SL 8cm
7. DVD DL 8cm
8. CD 8cm
9. LCD 8cm
0. Reset SLED TILT
TC. —:—:— EMG.00
CD 12cm

```

Display when CD 12cm disc was selected

- [0] Reset SLED TILT: Reset the Sled and Tilt to initial position. (Reset the Sled only to initial position because the Tilt mechanism is not available in this model.)
- [1] Disc Type Check: Judge automatically the loaded disc. As the judged result is displayed at the bottom of screen, make sure that it is correct. If Disc Check Memory menu has not been executed after EEPROM default setting, the disc type cannot be judged. In this case, return to the initial menu and make a check for three types of discs (SL, DL, CD).
- [2] to [9]: Select the loaded disc. The adjusted value is written to the address of selected disc. No further entry is necessary if [1] was selected.

## 2. Servo Control

```

Servo Control
1. LD Off R. Sled FWD
2. SP Off L. Sled REV
3. Focus Off
4. TRK. Off
5. Sled Off
6. CLVA Off
7. FCS. Srch Off

0. Reset SLED TILT
SA.-----SI.—EMG.00
DVD SL 12cm

```

On this screen, the servo on/off control necessary for replay is executed. Normally, turn on each servo from 1 sequentially and when CLVA is turned on, the usual trace mode becomes active. In the trace mode, DVD sector address or CD time code is displayed. This is not displayed where the spindle is not locked.

The spindle could run overriding the control if the spindle system is faulty or RF is not present. In such a case, do not operate CLVA.

- [0] Reset SLED TILT: Reset the Sled and Tilt to initial position. (Reset the Sled only to initial position because the Tilt mechanism is not available in this model.)
- [1] LD: Turn ON/OFF the laser.
- [2] SP: Turn ON/OFF the spindle.
- [3] Focus: Search the focus and turn on the focus.
- [4] TRK.: Turn ON/OFF the tracking servo.
- [5] Sled: Turn ON/OFF the sled servo. When PLL is not locked (cannot be locked), the sled servo is not turned ON. The display keeps ON.)
- [6] CLVA: Turn ON/OFF normal servo of spindle servo.
- [7] FCS. Srch: Apply same voltage as that of focus search to the focus drive to check the focus drive system.
- [→] Sled FWD: Move the sled outward. Perform this operation with the tracking servo turned off.
- [←] Sled REV: Move the sled inward. Perform this operation with the tracking servo turned off.

### 3. Track/Layer Jump

Track/Layer Jump			
1.	1Tj FWD	R. Fj	(L1->L0)
2.	1Tj REV	L. Fj	(L0->L1)
3.	2Tj FWD	U. Lj	(L1->L0)
4.	2Tj REV	D. Lj	(L0->L1)
5.	NTj FWD		
6.	NTj REV		
7.	500Tj FWD		
8.	500Tj REV		
9.	10k/20k FWD		
0.	10k/20k REV		
		SA. ————	SI. — EMG. 00
DVD DL 12cm			

On this screen, track jump, etc. can be performed. Only for the DVD-DL, the focus jump and layer jump are displayed in the right field.

- [1] 1Tj FWD: 1-track jump forward.
- [2] 1Tj REV: 1-track jump reverse.
- [3] 2Tj FWD: 2-track jump forward.
- [4] 2Tj REV: 2-track jump reverse.
- [5] NTj FWD: N-track jump forward.
- [6] NTj REV: N-track jump reverse.
- [7] 500Tj FWD: Fine search forward.
- [8] 500Tj REV: Fine search reverse.
- [9] 10k/20k FWD: Direct search forward.
- [0] 10k/20k REV: Direct search reverse.

– The following commands are valid for DVD-DL disc only –

- [→] (L1 → L0): Focus jump (Trk/Sled Servo OFF) forward.
- [←] (L0 → L1): Focus jump (Trk/Sled Servo OFF) reverse.
- [↑] (L1 → L0): Layer jump (Trk/Sled Servo ON) forward.
- [↓] (L0 → L1): Layer jump (Trk/Sled Servo ON) reverse.

### 4. Manual Adjustment

Manual Adjustment: Up/Down			
1.	TRK. Offset		
2.	Focus Gain		
3.	TRK. Gain		
4.	Focus Offset		
5.	Focus Balance		
6.	L.F. Offset		
7.	Analog FRSW		
8.	PLL Dac Gain		
9.	EQ BOOST		
0.	GD ADJ		
Adjustment: Up/Down		SA. ————	SI. -- EMG. 00
DVD SL 12cm		Jitter FF	

On this screen, each item can be adjusted manually. Select the desired number [1] to [0] from the remote commander, and current setting for the selected item will be displayed, then increase or decrease numeric value with [↑] key or [↓] key. This value is stored in the EEPROM. If CLV has been applied, the jitter is displayed for reference for the adjustment.

- [1] TRK. Offset: Adjusts tracking offset.
- [2] Focus Gain: Adjusts focus gain.
- [3] TRK. Gain: Adjusts track gain.
- [4] Focus Offset: Adjusts focus offset.
- [5] Focus Balance: Adjusts focus balance.
- [6] L.F. Offset: Adjusts loop filter offset.
- [7] Analog FRSW: Sets select switch of analog feedback circuit.
- [8] PLL Dac Gain: Adjusts D/A converter gain of PLL.
- [9] EQ BOOST: Adjusts boost amount of equalizer.
- [0] GD ADJ: Adjusts group delay amount.

## 5. Auto Adjustment

Auto Adjustment	
1. Auto TRK. Offset	
2. Auto Focus Balance	
3. Auto Focus Offset	
4. Auto Focus Gain	
5. Auto TRK. Gain	
6. Auto EQ.	
7. Auto L.F. Offset	
8. Auto Group Delay	
SA.04EF905 SI.00 EMG.00	
DVD SL 12cm	

On this screen, each item can be adjusted automatically. Select the desired number [1] to [8] from the remote commander, and selected item is adjusted automatically.

- [1] Auto TRK. Offset: Adjusts tracking offset.
- [2] Auto Focus Balance: Adjusts focus balance.
- [3] Auto Focus Offset: Adjusts focus offset.
- [4] Auto Focus Gain: Adjusts focus gain.
- [5] Auto TRK. Gain: Adjusts track gain.
- [6] Auto EQ
- [7] Auto L.F. Offset: Adjusts loop filter offset.
- [8] Auto Group Delay

## 6. Memory Check

The display image is shown below and three screens in total can be selected.

EEPROM DATA 1		—DL—				
	CD	LCD	SL	L0	L1	
Focus Gain	xx	xx	xx	xx	xx	
TRK. Gain	xx	xx	xx	xx	xx	
FCS Balnce	xx	xx	xx	xx	xx	
Focus Bias	xx	xx	xx	xx	xx	
TRV Offset	xx	xx	xx	xx	xx	
L.F. Offset	xx	xx	xx	xx	xx	
EQ. Boost	xx	xx	xx	xx	xx	
—						
UP	: Last Data					
DOWN	: Next Data					
CLEAR	: Default Set					
						page.1/3

EEPROM DATA 2		—DL—				
	CD	LCD	SL	L0	L1	
RF Jitter	xx	--	xx	xx	xx	
RF Level	xx	--	xx	--	--	
FE Level	xx	--	xx	--	--	
FE Balance	xx	--	xx	--	--	
TRV.Level	xx	--	xx	--	--	
TE Gain	xx	xx	--	--	--	
PI Level	xx	--	xx	xx	--	
—						
UP	: PREV Data					
DOWN	: Next Data					
CLEAR	: Default Set					
						page.2/3

EEPROM DATA 3		—DL—				
	CD	LCD	SL	L0	L1	
Analog FRSW	xx	xx	xx	xx	xx	
PLL Dac Gain	xx	xx	xx	xx	xx	
Mirror Time	xx	xx	xx	xx	xx	
—						
THR A&L	xx	xx	xx/xx	xx	xx	
UP	: PREV Data					
DOWN	: First Data					
CLEAR	: Default Set					
						page.3/3

On this screen, current servo adjusted data stored in the EEPROM are displayed. The adjusted data are initialized by pressing the [CLEAR] key, but be careful that they are not recoverable after initialization.

Before clearing the adjusted data, make a note of the set data. This screen will also appear if [0] All is selected in the Drive Auto Adjustment. In this case, default setting cannot be made. “THR A&L” data on the second page cannot be changed if default setting is once made.

## 6-6. MECHA AGING

```

    ### Mecha Aging ###

Press OPEN key

Abort : STOP key

```

On the Test Mode Menu screen, selecting [3] executes the aging of mechanism. First, open the tray and load a disc. Press the [OPEN] key, and the aging will start. During aging, the number of the repeat cycle is displayed. Aging can be aborted at any time by pressing the [STOP] key. After the operation has stopped, unload the disc and press again the [STOP] key or the [RETURN] key to return to the Test Mode Menu.

## 6-7. EMERGENCY HISTORY

```

    ### EMG. History ###

Laser Hours   CD   xxhxxm
              DVD  xxhxxm

1.  00 00 00 00  00 00 00 00
    00 00 00 00  00 00 00 00

2.  00 00 00 00  00 00 00 00
    00 00 00 00  00 00 00 00

Select : 1-9      Scroll : UP/DOWN
(1: Last EMG.)   Exit   : RETURN

```

On the Test Mode Menu screen, selecting [4] displays the information such as servo emergency history. The history information from last "1" up to "10" can be scrolled with [UP] key or [DOWN] key. Also, specific information can be displayed by directly entering that number with the ten-key pad from [1] to [9].

(Emergency history code is shown separately.)

The upper two lines display the laser ON total hours. Data below minutes are omitted.

### Clearing History Information

- ① Clearing laser hours  
Press [DISPLAY] and [CLEAR] keys in this order.  
Both CD and DVD data are cleared.
- ② Clearing emergency history  
Press [TOP MENU] and [CLEAR] keys in this order.
- ③ Initializing setup data  
Press [MENU] and [CLEAR] keys in this order.  
The data have been initialized when "Set Up Initialized" message is displayed.  
The EMG. History display screen will be restored soon.

## 6-8. VERSION INFORMATION

```

    ### Version Infomation ###

IF con.      Ver.x.xxx (xxxx)
              Group  xx

SYScon.      Ver.x.xxx (xxxx)
              Model  xx
              Region 0x

Servo DSP Ver:x.xxx
AVD ucode Ver:xxxxxxxx
OPT TYPE : x LASER
Exit : RETURN

```

The ROM version, region code, OPT type, etc. are displayed if [5] is selected in the Test Mode Menu. The parenthesized hexadecimal number in the version number field indicates the checksum value of the ROM.

### \* Note after Downloading

After downloading ROM data, sometimes it happens that checksum is not the same as that of ROM data that has been downloaded. In such a case, go back to the menu screen and select "0. Syscon Diagnosis", then select "1. All" in "2. Version". If the result of this operation does not give an agreement, it must be either Download error or ROM error.

## 6-9. VIDEO LEVEL ADJUSTMENT

On the Test Mode Menu screen, selecting [6] displays color bars for video level adjustment. During display of color bars, OSD disappears but the menu screen will be restored if pressing any key.

## 6-10. IF CON SELF DIAGNOSTIC FUNCTION

### 1. IF-89 BOARD (IF CON) TEST MODE

The IF-89 board (IF CON) test mode is the IF CON self-diagnosis mode. The IF CON can diagnose the functions of the IF-89 board that the IF CON controls. Normally, the IF CON makes a serial communication with the SYSTEM CONTROL and operates following the commands from the SYSTEM CONTROL, but in the Test mode, the IF CON operates independently from the SYSTEM CONTROL.

In the test mode, the following functions can be checked.

1. Button function
2. Remote commander receiving function
3. SYSTEM CONTROL-IF CON serial communication
4. Click shuttle function
5. Fluorescent display tube lighting check
  - Grid check
  - Anode check
6. LED control function


In the test mode, the main unit operates same as usual, except voltage monitoring, communication monitoring, display of fluorescent display tube, and LED control.

1. The routine that monitors +3.3 V (PCONT) of MB-103 board is not provided.
2. The monitoring timer for serial communication with the SYSTEM CONTROL is not provided. The main unit is not placed in the Standby mode, even if the communication with SYSTEM CONTROL is normal.
3. Display of fluorescent display tube.  
(Normally, display is made following the commands from SYSTEM CONTROL)
4. LED control.  
(Normally, control is made following the commands from SYSTEM CONTROL)

## 2. OPERATION OF SELF CHECK MODE

The Self Check mode is the function to conduct the basic test to the FL display and DVD panel section.

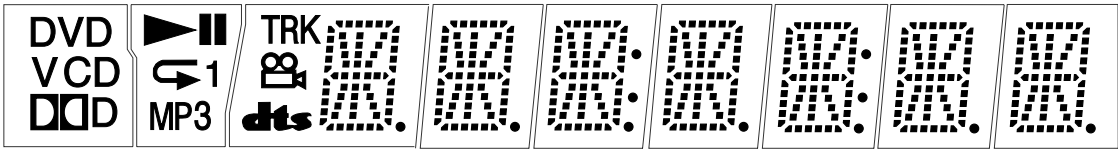
### 2-1. Self Check Mode Transition Processing

At the AC Power ON after reset of IF CON is released with the MB-103 board are not connected to the AV-61 board, or while pressing the  key on the main unit with the IF CON in STANDBY mode, enter **RETURN** → **DISPLAY** (or **SET UP**) on the remote commander, and the main unit transits to the Self Check Mode.

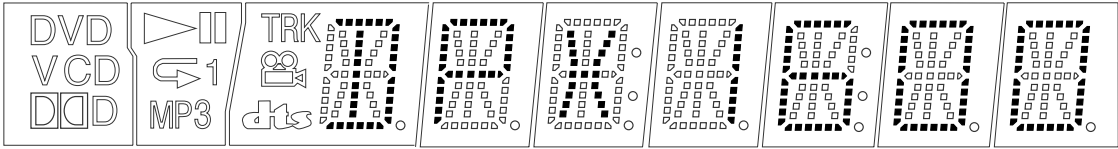
2-2. Operation of Auto Self Check

When the Self Check mode becomes active at the AC Power ON or by key input, the test display of the following steps (1) to (4) is repeated.

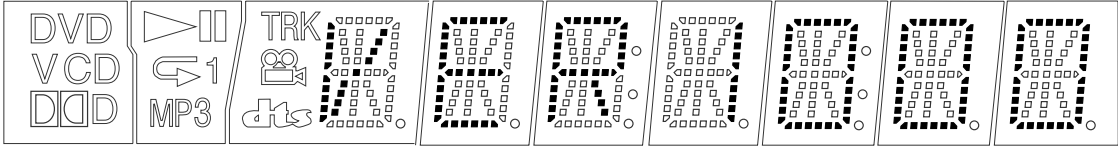
(1) FLD and LED all ON (for 5 seconds)



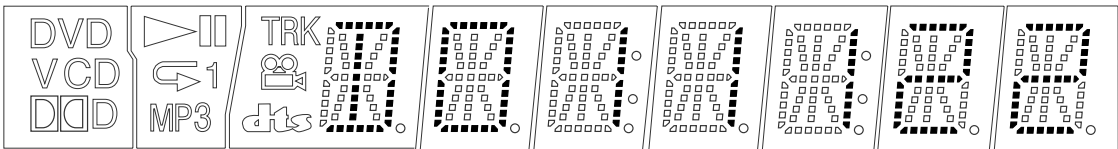
(2) MODEL display (for 2 seconds)



(3) Version display (for 2 seconds)



(4) ROM creation date display (for 2 seconds)








### 2-3. Each Self Check Function

Each Self Check function tests the FLD display, LED display, and key input.

Input Voltage [V]	IC404: Pin No. (Signal)			
	Pin ③③ (BNRKEY)	Pin ③④ (PLAY)	Pin ③⑤ (O/C)	Pin ③⑥ (TVS)
0 – 0.2	–	PLAY	OPEN/CLOSE	TVS
0.6 – 0.82	–	NEXT	–	PIC MODE
1.16 – 1.47	–	PREVIOUS	–	MODE
1.8 – 2.12	–	PAUSE	–	–
2.48 – 2.7	–	STOP	–	–

#### 2-3-1. FLD and LED All ON

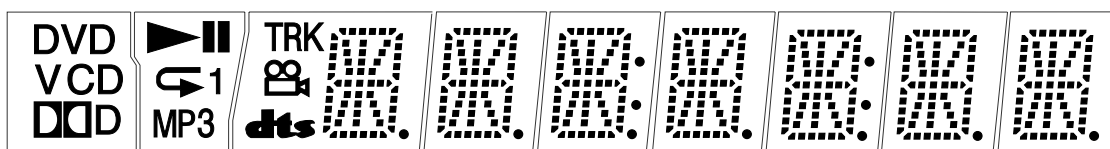
##### 2-3-1-1. Transition Keys in Self Check Mode

-  key and  key on the main unit
-  key on the main unit and the remote commander

##### 2-3-1-2. Operation and Display

In this mode, all LEDs except STANDBY LED and all segments of FLD turn ON.

- Example of FLD all ON




#### 2-3-2. Main Unit Key Name Display and Key Code Display

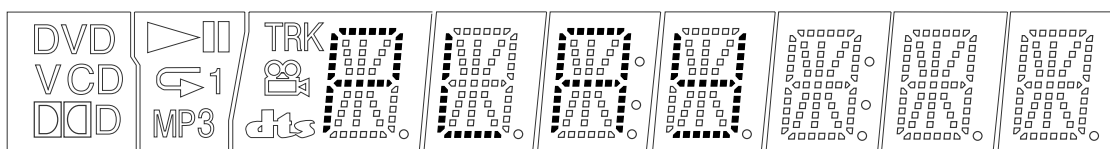
##### 2-3-2-1. Transition Keys in Self Check Mode


- Keys on the main unit except keys transited in Self Check Mode

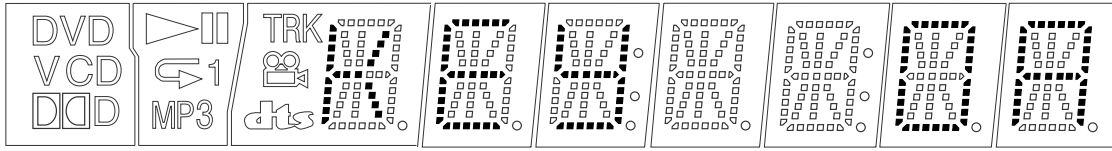
##### 2-3-2-2. Operation and Display

When a key on the main unit is pressed in the Self Check mode, the name of that key is displayed on the FLD. Also, the key name display and the key code display can be switched with the **[DISPLAY]** key on the remote commander. “NOTHING” is displayed when nothing is entered. Also, VIDEO CD, DVD, and CD segments turn on when a communication error occurred.

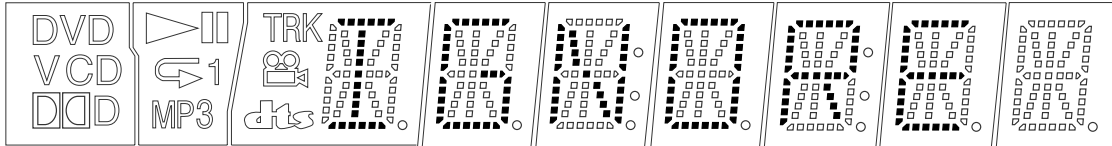
- FLD display (at input of  key on the main unit)



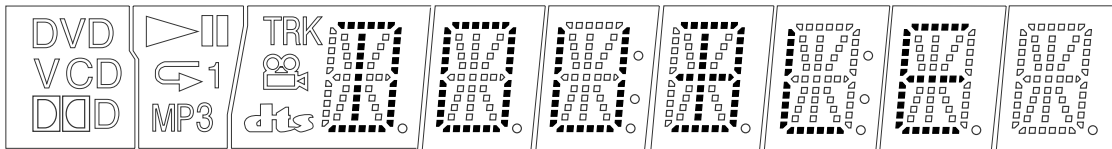
- Key code display  
(at input of  key, key code: 0 Ah)



- At input of faulty voltage



- When key is pressed double



### 2-3-3. Remote Commander Key Name Display and Key Code Display

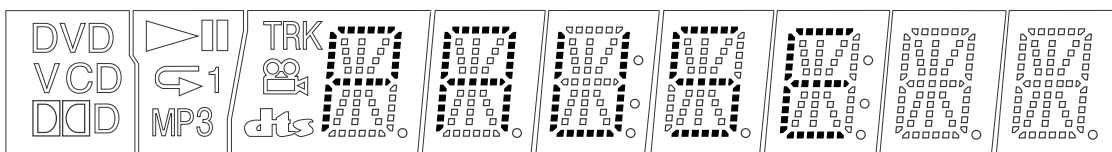
#### 2-3-3-1. Transition Keys in Self Check Mode


- Remote commander keys except keys transited in Self Check Mode

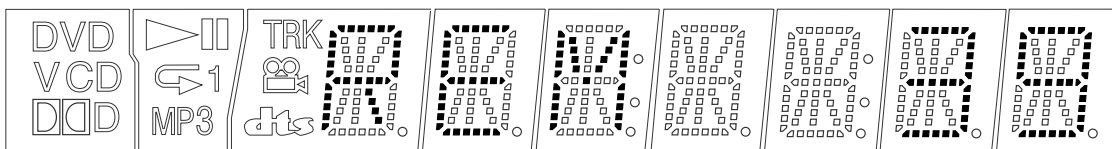
#### 2-3-3-2. Operation and Display

When a key on the remote commander is pressed in the Self Check Mode, the name of that key is displayed on the FLD. Also, the key name display and the key code display can be switched with the **DISPLAY** key on the remote commander. "NOTHING" is displayed when nothing is entered. Also, VIDEO CD, DVD, and CD segments turn on when a communication error occurred.

- Remote commander key name display (at input of  key)



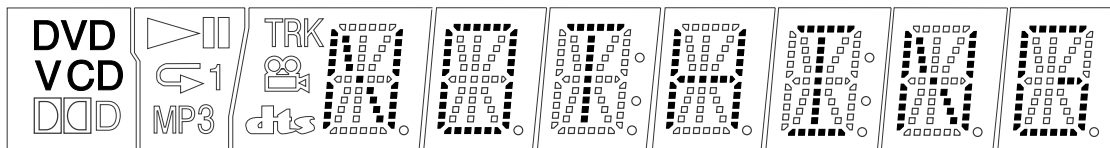
- Remote commander key code display  
(at input of  key, key code: 39 h)



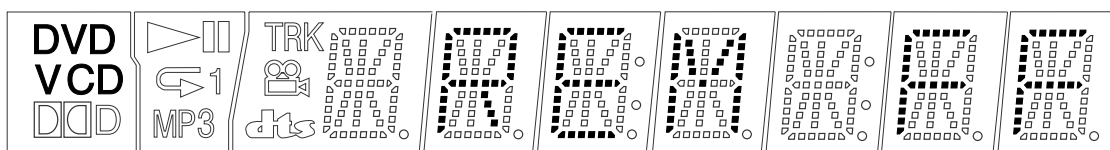
### 2-3-4. Communication Monitoring Display

The communication state is monitored and displayed while the key name on the main unit and the remote commander is displayed. When the communication to the System Controller failed, VIDEO CD, DVD, and CD segments turn on.

- Communication error display  
(at no input of key and remote commander)



- Communication error display  
(at code display without input of the remote commander)



### 2-3-5. FLD Anode Test Display and SHUTTLE Click Operation Test

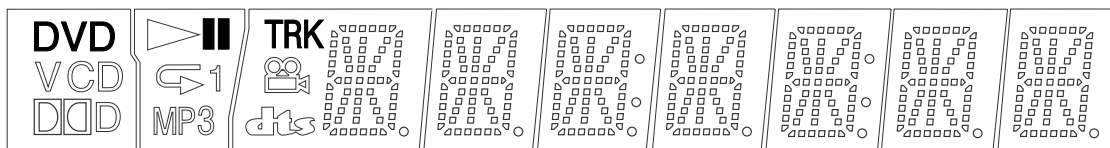
#### 2-3-5-1. Transition Keys in Self Check Mode

- key on the remote commander
- SHUTTLE on the remote commander during Anode Test display  
(This unit does not provide JOG/SHUTTLE, and therefore use another DVD remote commander having the JOG/SHUTTLE)

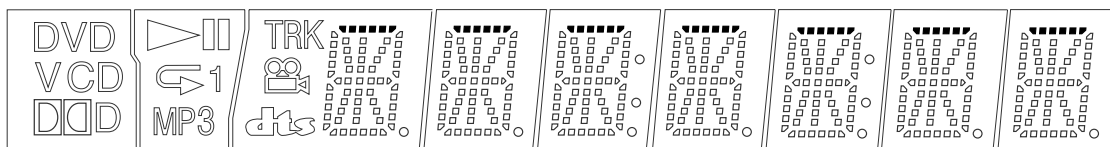
#### 2-3-5-2. Operation and Display

The Self Check Mode transits to this mode when key is entered. This tests whether each segment turns on individually. Only the first segment of each grid of FLD turns on, and each time the SHUTTLE is entered, the segment of each grid is switched in order. When SHUTTLE input is clockwise, the segment switches in 1 – 2 – 3 direction, or counterclockwise it switches in 3 – 2 – 1 direction.

- Display at the start of Anode Test




↓ (Input in CW direction)




**2-3-6. FLD Grid Test Display and SHUTTLE Click Operation Test**

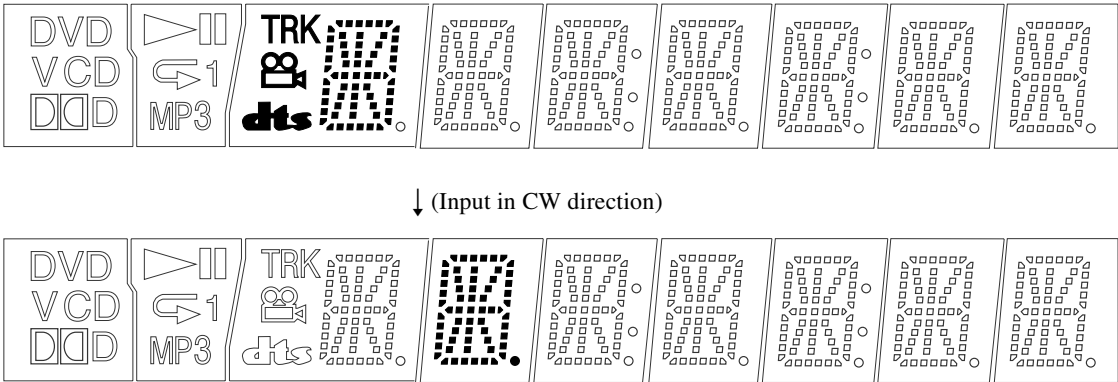
**2-3-6-1. Transition Keys in Self Check Mode**

-  key on the remote commander
- SHUTTLE on the remote commander during Grid Test display  
(This unit does not provide JOG/SHUTTLE, and therefore use another DVD remote commander having the JOG/SHUTTLE)

**2-3-6-2. Operation and Display**


The Self Check Mode transits to this mode when  key is entered. This tests whether each grid turns on individually. The first grid only of FLD turns on and other grids turn off. Each time the SHUTTLE is entered, the grid is switched in order. When SHUTTLE input is clockwise, the grid switches in 1 – 2 – 3 direction, or counterclockwise it switches in 3 – 2 – 1 direction.

**• Display at the start of Grid Test**



**2-3-7. LED Test Display**

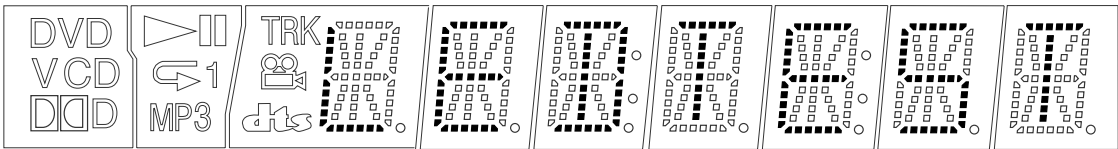
**2-3-7-1. Transition Keys in Self Check Mode**

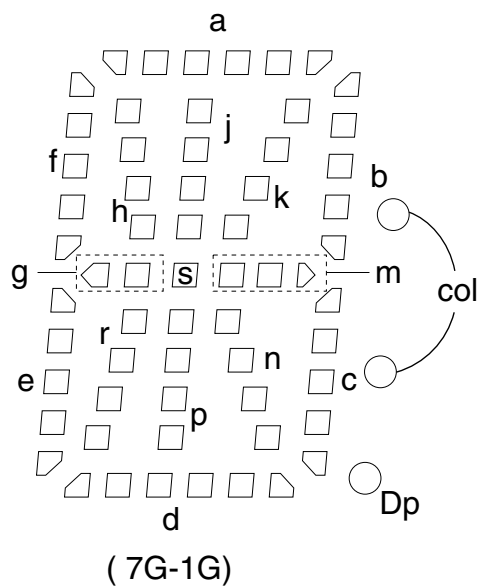
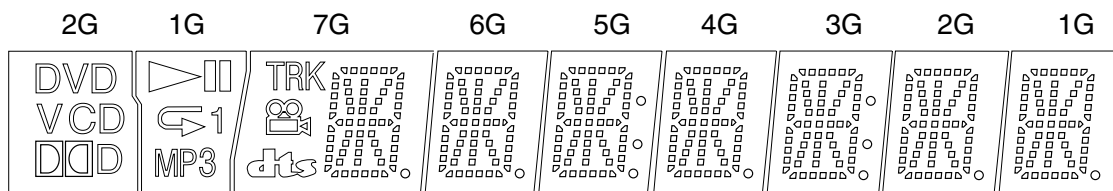
-  key on the remote commander
- SHUTTLE on the remote commander during Grid Test display  
(This model does not provide JOG/SHUTTLE, and therefore use another DVD remote commander having the JOG/SHUTTLE)

**2-3-7-2. Operation and Display**

LED is switched in order by the input of JOG/SHUTTLE on the remote commander. Also, LED ON/OFF is switched by the input of same key as the function that turns on the LED concerned.

**• FLD display during LED Test**





#### ANODE CONNECTION

	7G	6G	5G	4G	3G	2G	1G
P1	TRK		col		col	DVD	II
P2	a	a	a	a	a	a	a
P3	h	h	h	h	h	h	h
P4	j	j	j	j	j	j	j
P5	k	k	k	k	k	k	k
P6	b	b	b	b	b	b	b
P7	f	f	f	f	f	f	f
P8	m	m	m	m	m	m	m
P9	s	s	s	s	s	s	s
P10	g	g	g	g	g	g	g
P11	e	e	e	e	e	e	e
P12	n	n	n	n	n	n	n
P13	p	p	p	p	p	p	p
P14	r	r	r	r	r	r	r
P15	c	c	c	c	c	c	c
P16	d	d	d	d	d	d	d
P17	cts					DCD	MP3
P18						V	1
P19						CD	
P20	Dp	Dp	Dp	Dp	Dp	Dp	

## 6-11. TROUBLESHOOTING

### 6-11-1. Cannot Enter Test Mode

You cannot enter the Test mode when either button has been pressed by any reason with the board assembled in the front panel. In this state, the power does not turn on even under normal condition (the unit is kept in standby state), and also no button is active and the remote commander is not accepted. In this case, disconnect the MB-103 board and AV-61 board, and with the SELF CHECK (pin ⑩) of IF CON (IC404) on the IF-89 board kept in low state, supply AC, and the IF CON self-diagnosis mode will be forcibly activated. The IF CON (IC404) checks the SELF CHECK port only after the power on reset (only at AC supply, not in standby state). If any button is pressed, its name is displayed on the fluorescent display tube. But, if other than "NOTHING" is displayed though no button is pressed, it means that any button has been pressed.

### 6-11-2. Faults in Test Mode (MB-103 board)

#### 1. The test mode menu is not displayed.

##### 1-1. Board visual check

Check that the ICs of SYSCON (IC104), ROM (IC106 or IC107), AVD (IC403), ARP & SERVO (IC301) are working correctly.

Check that outside appearance of the ICs is normal.

Check that IC pins are not short-circuited.

Check that there is no soldering error.

Check that outside appearance of the capacitors and resistors is normal.

##### 1-2. Power supply voltage check

Check the power voltage of the power connector (CN102).

Check the power voltage of SYSCON (IC104).

Check the power voltage of ROM (IC106 or IC107).

Check the power voltage of AVD (IC403).

Check the power voltage of ARP & SERVO (IC301).

If the power voltage has any abnormality →

Check that the power supply lines are not shorted.

Check that there is no soldering error.

If any abnormality cannot be found still →

Check that each IC is working normally.

### 1-3. Clock signal check

Measure the clock signal frequency at CPUCK (CL101) of SYSCON (IC104) with an oscilloscope.

If the 8.25 MHz signal appears. → Check the machine according to section 1-3-1

If the 33 MHz signal appears. → Check the machine according to section 1-3-2.

If other frequencies are output.

R110 and R113 have defective soldering, X101 crystal oscillator is defective.

If the measurement point is fixed to either "H" or "L". →

Observe XFRRST (pin-⑦⑥) of SYSCON (IC104) with an oscilloscope.

If the measurement point is "L", check the following items.

If the IC has defective soldering, if the IC is short-circuited.

If the measurement point is "H",

→ Component X101 or SYSCON (IC104) is defective.

#### 1-3-1. When the 8.25 MHz signal appears at CPUCK

##### • Check the XRD, XWRH and CS0X signal.

Observe XRD (pin-⑦⑨), XWRH (pin-⑦⑪), and CS0X (pin-⑤⑨) of SYSCON (IC104) with an oscilloscope.

If these pins are fixed to either "L" (0V) or "H" (3.3V), or if these pins stay in the center voltage, check the followings.

Check if the signal line does not have the defective soldering.

Check if the signal line is short-circuited with other signal lines.

If you cannot find any problem → SYSCON (IC104) is defective.

##### • HA [0 to 21] signal and HD [0 to 15] signal check

Observe HA [0 to 21] (pins-⑩② to ⑩⑨, ⑩⑪ to ⑩⑮, ⑩⑰, ① to ⑤) of SYSCON (IC104) and HD [0 to 15] (pins-⑧⑤ to ⑩⑩) with an oscilloscope.

If these pins are fixed to either "L" (0V) or "H" (3.3V), or if the HA pin stays in the center voltage, check the followings. (HD stays in the center voltage when it is normal.)

→ Check if the signal line does not have the defective soldering, or is short-circuited with other signal line or SYSCON (IC104) is defective.

##### • Reset signal check

Check if XFRRST (pin-⑦⑥) of SYSCON (IC104) normal or not.

The signal starts up at the same time as Vcc → Defective soldering.

If the trouble does not apply to any of the above-described phenomenon, SYSCON (IC104) or ROM (IC106 or IC107) is defective.

### 1-3-2. When the 33 MHz signal appears at CPUCK

#### • WAIT signal check

Observe XWAIT (pin-⑥7) of SYSCON (IC104) with an oscilloscope.

If it is fixed to “L” (0V). → Observe CS2X to CS5X (pins-⑥0 to ⑥3).

If CS2X or CS3X is “L”. → AVD (IC403) has defective soldering or AVD is defective.

If CS4X or CS5X is “L”. → ARP & SERVO (IC301) has defective soldering or ARP & SERVO is defective.

If any one of the above is not “L”. → XWAIT or CSnX is short-circuited or has the defective soldering or AVD (IC403) is defective or ARP & SERVO (IC301) is defective.

Center voltage → The XWAIT line has defective soldering or is short-circuited or AVD (IC403) is defective or ARP & SERVO (IC301) is defective or SYSCON (IC104) is defective.

#### • CSnX signal check

Observe CS0X to CS5X (pins-⑤8 to ⑥3) of SYSCON (IC104) with an oscilloscope.

If they are fixed to “L” (0V) or if to center voltage → Check that the ICs do not have the defective soldering or is short-circuited with the other signal lines or SYSCON (IC104) is defective.

CS0X: ROM (IC106 or IC107)

CS2X, CS3X: AVD (IC403)

CS4X, CS5X: ARP & SERVO (IC301)

If the trouble symptom does not apply to any of the above phenomenon, SYSCON (IC104) or ROM (IC106 or IC107) is defective.

## 2. Test mode menu is displayed but the machine stops when menu is selected

### 2-1. AVD (IC403) check

Observe SDCLKO (pin-②7) of AVD (IC403) with an oscilloscope.

95 MHz → No problem

27 MHz → Observe the XRST, HA, HD, XRD, XWRH INT and CS signal waveform at the respective pins of AVDEC, AVD (IC403) is defective.

If the signal is other than the above frequencies → AVD (IC403) 27MHz signal line (CLKI (pin-①50), SCLKIN (pin-①60)) is short-circuited, IC mount is defective, AVD (IC403) is defective, PLL (IC103) is defective.

### 2-2. INT signal check

Observe INT0 to 2 (pins-①6 to ①8) of SYSCON (IC104) with an oscilloscope.

If they are fixed to “L” (0V) or fixed to the center voltage → Check that the ICs do not have the defective soldering, or are short-circuited, SYSCON (IC104) is defective, or the following ICs are not defective.

INT0: AVD (IC403)

INT1, INT2: ARP & SERVO (IC301)

### 2-3. If any abnormality cannot be confirmed by the above-described checks, check the CS signal that is currently output.

The CS signal other than CS0X is being output. → IC mount is defective or the IC is defective depending on the moving CS signal.

CS2X, CS3X: AVD (IC403)

CS4X, CS5X: ARP & SERVO (IC301)

If the trouble is not applicable to any of the above phenomenon, SYSCON (IC104) or ROM (IC106 or IC107) is defective.

## 3. If the message “SDSP No Ack” appears after the menu is displayed.

### 3-1. ARP & SERVO clock signal check

Check frequency of CLKIN (pin-①50)

33 MHz → Normal

Frequency other than 33 MHz → CLKIN is short-circuited or defective soldering or PLL (IC103) is defective or ARP & SERVO (IC301) is defective

### 3-2. ARP & SERVO (IC301) PLL oscillation check

Observe PLCKO (pin-⑧7) of ARP & SERVO (IC301) with an oscilloscope.

If the pin is fixed to either “L” (0V) or “H” (3.3V).

If XRST is fixed to “L”. XRST has the defective soldering, In all other cases. ARP & SERVO (IC301) is defective

If it is oscillating.

HA [0 to 7] are HD [8 to 15] are short-circuited, check XSDSPIT and XSDSPCS or ARP & SERVO (IC301) is defective.

## 4. If trouble occurs at the specific item of the “Diag All Check”.

IC mount of the NG item is defective or IC is defective.

## 5. Picture and audio are not output.

Check connection of CN601

Check for the defective connection of flat cable and check of damage of the flat cable.

## 6. Picture is output but audio is not output.

Check the audio data output (at pins-②4, ②8, and ②9) of AVD (IC403)

The audio data is not output. → AVD (IC403) or audio DAC (IC601) mount is defective or power supply is defective or AVD (IC403) or audio DAC (IC601) is defective.

PLL (IC103) 512fs output check

If the frequency or waveform has abnormality. → The signal line has defective soldering or the signal line is short-circuited with other signal lines or PLL (IC103) is defective.

## 7. Audio is output but picture is not output.

Observe pins-⑤5, ⑤7, ⑤9, ⑥1, ⑥3 and ⑥5 of AVD (IC403) with an oscilloscope.

If the analog signal is not output. → The signal line has the defective soldering or is short-circuited or parts are defective or AVD (IC403) is defective.

## 6-11-3. Drive Auto Adjustment stops due to error.

The ARP & SERVO (IC301) analog circuit of MB-103 board is defective or RF-Amp (IC201) or M-Driver (IC202) peripheral circuit is defective or optical pickup block is defective or flat cable connection is defective

#### **6-11-4. The product itself is defective.**

- If MB103 does not have any problem,

The board other than MB-103 board is defective or connection is defective or optical pickup block is defective or mechanism deck is defective

#### **1. Power LED does not light in Red when the AC power is turned on.**

Check the EVER -13V (pin-③), EVER+3.3V (pin-⑪), EVER+11V (pin-⑬) voltage of the power supply block CN201.

If voltage is abnormal. → The power supply block is defective.

#### **2. Power LED does not light in green after transmitting the POWER on command. It remains lighting in red (in the STANDBY mode).**

##### **2-1. Check the EVER -13V (pin-③), EVER+3.3V (pin-⑪), EVER+11V (pin-⑬) voltage at CN201 of the power supply block/**

If voltage is abnormal. → The power supply block is defective.

##### **2-2. Check if the fuse on the IF board has blown or not.**

If the fuse has blown → Replace the fuse.

##### **2-3. Check the P-CONT (pin-②) at CN401 of the IF-89 board when the POWER button is pressed.**

If it remains at "L",

→ The signal line has the defective soldering or it is short-circuited with other signal lines or capacitor or resistor is defective or IFCON is defective or connection between the power supply block and the IF-89 board is defective, or connector installation is defective, or the power supply block is defective.

##### **2-4. Check if the button is kept depressed in the IFCON self mode.**

If the button is kept depressed. → The front panel is defective, or IF-89 board is defective.

##### **2-5. Check PONCHK (pin-⑩) of IFCON (IC404) on the IF-89 board.**

If it is 0.5 V or more. → The power supply is defective, or IF-89 board is defective.

#### **3. Power LED becomes red (STANDBY mode) in at once through Power LED lights in Green once when the POWER button is pressed.**

##### **3-1. Check CN201 voltage of the power supply block when the LED lights in green.**

If voltage is abnormal. → The power supply block is defective, or the IF-89 board is defective, or MB103 is defective

##### **3-2. Check XFRST (pin-⑧) at CN101 on the MB-103 board.**

If it is fixed to "L". → The signal line has defective soldering, or is short-circuited with other signal lines, or parts are defective.

##### **3-3. Check IFBSY (pin-⑤), XIFCS (pin-⑥), SI0 (pin-④), SO0 (pin-①) and SC0 (pin-③) at CN101**

If they are fixed to "H" or "L".

→ The signal line has defective soldering, or is short-circuited with other signal line, or parts are defective, or SYSCON (IC104) is defective

If they change between "L/H".

Connector installation is defective, or the IF-89 board is defective, or SYSCON (IC104) is defective.

If they stay in the center voltage.

Poor connection of flexible wiring board such as it is inserted in an angle diagonally, or defective soldering, or is short-circuited with other signal line.

##### **3-4. Check PONCHK (pin-⑩) of IFCON (IC404) on the IF-89 board.**

If rise-up time from 0.5 V to 1.5 V or more takes longer time, or it does not exceed 1.5 V or more. → The IF board is defective.

#### **4. The LED lights in green but the FL display does not light when the POWER button is pressed.**

Connection between the power supply block and the IF-89 board is defective, or connector installation is defective, or the IF-89 board is defective.

#### **5. Both picture and audio are not output.**

Connection between the power supply block and the IF-89 board is defective, or connection between the IF-89 board and the AV-61 board is defective, or connection between the AV-61 board and the MB-103 board is defective, or connector installation is defective, or AV-61 board is defective.

#### **6. Picture is not normal. (Block noise or others appear.)**

The MB-103 board AVD (IC403) or SDRAM (IC404, IC405) is defective, or ARP & SERVO (IC301) is defective.



MEMO

## SECTION 7

### ELECTRICAL ADJUSTMENT

**In making adjustment, refer to 7-3. Adjustment Related Parts Arrangement.**

This section describes procedures and instructions necessary for adjusting electrical circuits in this unit.

**Instruments required:**

- 1) Color monitor TV
- 2) Oscilloscope 1 or 2 phenomena, band width over 100 MHz, with delay mode
- 3) Frequency counter (over 8 digits)
- 4) Digital voltmeter
- 5) Standard commander (RMT-D126J)
- 6) DVD reference disc  
HLX-501 (J-6090-071-A) (dual layer)  
HLX-503 (J-6090-069-A) (single layer)  
HLX-504 (J-6090-088-A) (single layer)  
HLX-505 (J-6090-089-A) (dual layer)
- 7) SACD reference disc  
HLXA-509 (J-6090-090-A)
- 8) Extension Cable (J-6090-107-A)

#### 7-1. POWER SUPPLY CHECK

**ETXNY381E2F:** NS305:AEP, UK, RU/NS310/NS405/NS410

**ETXNY381N2F:** NS305:ME2, EA, ME5, AUS, HK, SP, KR/NS315:AR/NS415:ME2, AUS

**HS11S1U:** NS305:TW/NS315:US, CND, MX/NS415:US, CND

**HS11S1F:** NS315:PX, E, BR

Mode	E-E
Instrument	Digital voltmeter
EVER +3.3 V Check	
Test point	CN201 (SN845GPU Board: CN920) pin ⑪
Specification	$3.5 \pm 0.2$ Vdc
SW +3.3 V Check	
Test point	CN201 (SN845GPU Board: CN920) pin ⑧
Specification	$3.3 \pm 0.2$ Vdc
+5 V Check	
Test point	CN201 (SN845GPU Board: CN920) pin ⑫
Specification	$5.0 \pm 0.3$ Vdc
SW +11 V Check	
Test point	CN201 (SN845GPU Board: CN920) pin ⑥, ⑦
Specification	$11.0 \pm 1.0$ Vdc
EVER +11 V Check	
Test point	CN201 (SN845GPU Board: CN920) pin ⑬
Specification	$11.0 \pm 1.0$ Vdc
EVER -13 V Check	
Test point	CN201 (SN845GPU Board: CN920) pin ③
Specification	$-13.0 \pm 1.0$ Vdc

**Checking method:**

- 1) Confirm that each voltage satisfies the specification.

**Note**

Because the heatsink installed on the power supply board is a part of the primary side, never touch it to avoid electrical shock.

- Abbreviation
  - CND : Canadian model
  - RUS : Russian model
  - HK : Hong Kong model
  - KR : Korea model
  - TW : Taiwan model
  - EA : Saudi Arabia model
  - SP : Singapore model
  - ME : Middle East model
  - AUS : Australian model
  - MX : Mexico model
  - AR : Argentina model
  - BR : Brazilian model

## 7-2. ADJUSTMENT OF VIDEO SYSTEM

### 1. Video Level Adjustment (MB-103 BOARD)

#### <Purpose>

This adjustment is made to satisfy the NTSC standard, and if not adjusted correctly, the brightness will be too large or too small.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	LINE OUT (VIDEO) connector (75 $\Omega$ terminated)
Instrument	Oscilloscope
Adjusting element	RV501
Specification	$1.0^{+0.04}_{-0.02}$ Vp-p

#### Adjusting method:

- 1) In the test mode initial menu "6" Video Level Adjustment, set so that color bars are generated.
- 2) Adjust the RV401 to attain  $1.0^{+0.04}_{-0.02}$  Vp-p.

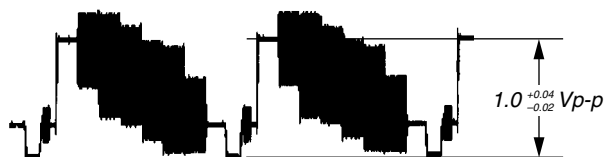


Fig.7-1.

### 2. Checking S Video Output S-Y

#### <Purpose>

Check S-terminal video output. If it is incorrect, pictures will not be displayed correctly in spite of connection to the TV with a S-terminal cable.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	S VIDEO OUT (S-Y) connector (75 $\Omega$ terminated)
Instrument	Oscilloscope
Specification	$1.0 \pm 0.05$ Vp-p

#### Checking method:

- 1) In the test mode initial menu "6" Video Level Adjustment, set so that color bars are generated.
- 2) Confirm that the S-Y level is  $1.0 \pm 0.05$  Vp-p.



Fig. 7-2.

### 3. Checking S Video Output S-C

#### <Purpose>

This checks whether the S video output S-C satisfies the NTSC standard. If it is not correct, the colors will be too dark or too light.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	S VIDEO OUT (S-C) connector (75 $\Omega$ terminated)
Instrument	Oscilloscope
Specification	$286 \pm 30$ mVp-p

#### Checking method:

- 1) In the test mode initial menu "6" Video Level Adjustment, set so that color bars are generated.
- 2) Confirm that the S-C burst is  $286 \pm 30$  mVp-p



Fig. 7-3.

### 4. Checking Component Video Output Y

#### <Purpose>

This checks component video output Y. If it is incorrect, correct brightness will not be attained when connected to, for instance, projector.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	COMPONENT VIDEO OUT (Y) connector, D1 VIDEO OUT connector, Pin ① (75 $\Omega$ terminated)
Instrument	Oscilloscope
Specification	$1.0 \pm 0.05$ Vp-p

#### Checking method:

- 1) In the test mode initial menu "6" Video Level Adjustment, set so that color bars are generated.
- 2) Confirm that the Y level is  $1.0 \pm 0.05$  Vp-p.



Fig. 7-4.

## 5. Checking Component Video Output B-Y

### <Purpose>

This checks component video output B-Y. If it is incorrect, correct color will not be displayed when connected to, for instance, component input projector.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	COMPONENT VIDEO OUT (CB) connector, D1 VIDEO OUT connector, Pin ③ (75 $\Omega$ terminated)
Instrument	Oscilloscope
Specification	A= $700 \pm 50$ mVp-p (others) $646 \pm 50$ mVp-p (For US, Canada, E)

### Checking method:

- 1) In the test mode initial menu "6" Video Level Adjustment, set so that color bars are generated.
- 2) Confirm that the B-Y level is A.

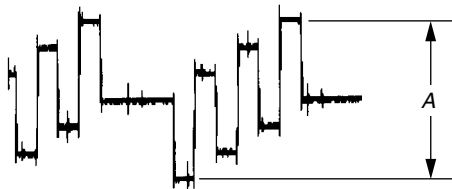


Fig. 7-5.

## 6. Checking Component Video Output R-Y

### <Purpose>

This checks component video output R-Y. If it is incorrect, correct color will not be displayed when connected to, for instance, component input projector.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	COMPONENT VIDEO OUT (CR) connector, D1 VIDEO OUT connector, Pin ⑤ (75 $\Omega$ terminated)
Instrument	Oscilloscope
Specification	B= $700 \pm 50$ mVp-p (others) $646 \pm 50$ mVp-p (For US, Canada, E)

### Checking method:

- 1) In the test mode initial menu "6" Video Level Adjustment, set so that color bars are generated.
- 2) Confirm that the R-Y level is B.

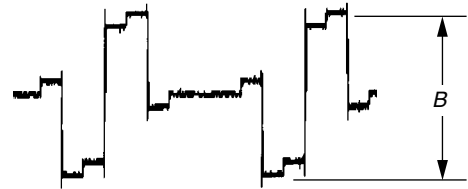
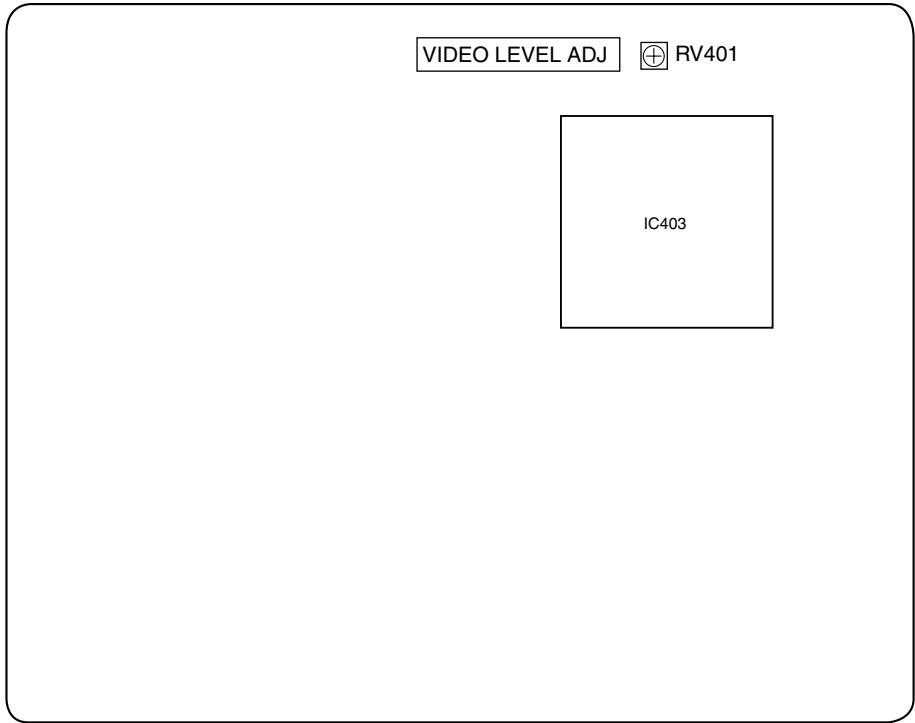


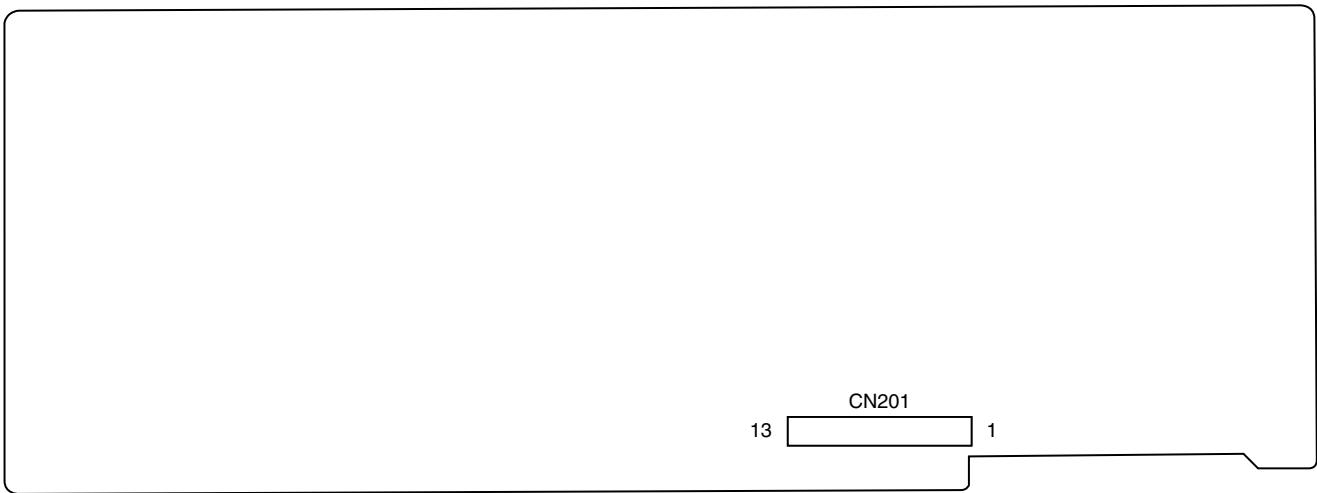
Fig. 7-6.

7-3. ADJUSTMENT RELATED PARTS  
ARRANGEMENT

MB-103 BOARD (Side A)



POWER BOARD (Side A)



## SECTION 8

### REPAIR PARTS LIST

#### 8-1. EXPLODED VIEWS

##### NOTE:

- -XX, -X mean standardized parts, so they may have some differences from the original one.
- Items marked “\*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Color Indication of Appearance Parts Example:  
 KNOB, BALANCE (WHITE) . . . (RED)  
                                   ↑                                  ↑  
                                   Parts of Color Cabinet's Color

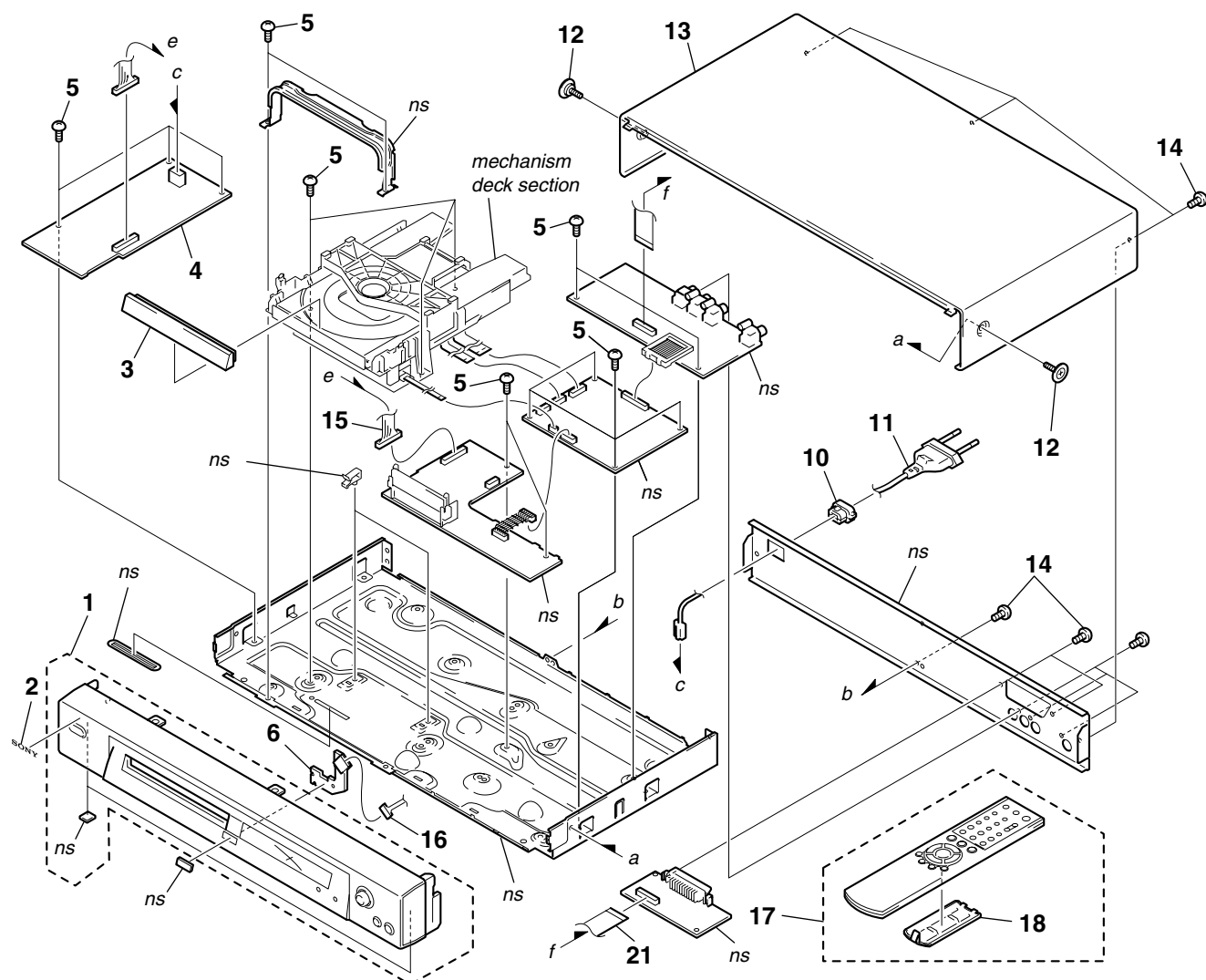
- Abbreviation  
 AE1 : AEP model  
 AE2 : AEP model  
 CND : Canadian model  
 RUS : Russian model  
 HK : Hong Kong model  
 KR : Korea model  
 TW : Taiwan model  
 EA : Saudi Arabia model  
 SP : Singapore model  
 ME : Middle East model  
 AUS : Australian model  
 MX : Mexico model  
 AR : Argentina model  
 BR : Brazilian model

The components identified by mark  $\triangle$  or dotted line with mark  $\triangle$  are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque  $\triangle$  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

## 8-1-1. MAIN SECTION

ns : not supplied



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
1	X-3952-267-1	PANEL ASSY,FRONT (NS415:ME2,AUS):BLACK		△ 11	1-575-651-21	CORD, POWER	
1	X-3952-268-1	PANEL ASSY,FRONT (NS415:US,CND):SILVER				(NS305:AEP,UK,RUS,HK/NS310/NS405/NS410)	
1	X-3952-269-1	PANEL ASSY,FRONT (NS315:US,CND,PX):SILVER		△ 11	1-757-140-11	CORD, POWER	
						(NS305:ME,EA,SP/NS315:PX,E/NS415:ME)	
1	X-3952-270-1	PANEL ASSY,FRONT (NS315:US,CND):SILVER		△ 11	1-757-813-11	CORD, POWER (NS315:BR)	
1	X-3952-271-1	PANEL ASSY,FRONT (NS305:ME2,EA,ME5,AUS,HK,KR):SILVER		△ 11	1-757-901-11	CORD, POWER (NS315:AR)	
				△ 11	1-782-752-31	CORD, POWER (NS305:KR)	
1	X-3952-272-1	PANEL ASSY,FRONT (NS305:SP,TW):GOLD		△ 11	1-783-531-11	CORD, POWER (NS315:MX)	
1	X-3952-356-1	PANEL ASSY,FRONT (NS405:AEP):BLACK		△ 11	1-790-588-11	CORD, POWER (NS305:AUS/NS415:AUS)	
1	X-3952-357-1	PANEL ASSY,FRONT (NS405:AEP,UK):SILVER		△ 11	1-823-597-11	CORD, POWER	
1	X-3952-358-1	PANEL ASSY,FRONT (NS305:AEP,RUS):BLACK				(NS315:US,CND/NS415:US,CND)	
1	X-3952-360-1	PANEL ASSY,FRONT (NS310):SILVER		△ 11	1-824-303-11	CORD, POWER (NS305:TW)	
				12	3-070-883-01	SCREW, TAPPING	
						(US,CND,PX,MX,AEP,RUS,AUS):BLACK	
1	X-3952-484-1	PANEL ASSY,FRONT (NS410):SILVER					
1	A-6060-865-A	PANEL ASSY,FRONT (NS315:AR,BR):SILVER		12	3-070-883-11	SCREW, TAPPING (SP,TW:GOLD/US,CND,MX,	
1	X-3952-354-1	PANEL ASSY,FRONT (NS315:MX,E):SILVER				E,AR,BR,AEP,UK,RUS,ME,EA,AUS,HK,KR):SILVER)	
1	X-3952-355-1	PANEL ASSY,FRONT (NS315:MX):BLACK		13	3-073-832-31	CASE, UPPER	
1	X-3952-359-1	PANEL ASSY,FRONT (NS305:AEP,UK,RUS):SILVER				(NS315:US,CND,MX,PX/NS415:ME,AUS):BLACK	
				13	3-073-832-41	CASE, UPPER (NS305:EA,ME,AUS,HK,KR/	
						NS315:US,CND/NS415:US,CND):SILVER	
2	3-066-225-01	SONY BADGE (5-A) (NS315:US,CND,PX,MX/NS415:ME,AUS):BLACK		13	3-073-832-51	CASE, UPPER (NS305:TW,SP):GOLD	
2	3-066-225-11	SONY BADGE (5-A) (NS305:ME,AUS,HK,KR,EA/NS315:US,CND,MX,E/NS415:US,CND):SILVER		13	3-073-832-71	CASE, UPPER (NS315:E,MX,AR,BR):SILVER	
2	3-066-225-31	SONY BADGE (5-A) (NS305:AEP,RUS/NS405:AEP):BLACK		13	3-074-466-21	CASE,UPPER (NS305:AEP,RUS/NS405:AEP):BLACK	
2	3-066-225-41	SONY BADGE (5-A) (NS305:AEP,UK,RUS/NS310/NS315:AR,BR/NS405/NS410):SILVER		13	3-074-466-31	CASE,UPPER (NS305:AEP,UK,RUS/NS310/NS405/NS410):SILVER	
2	4-963-404-41	SONY BADGE (5-A) (NS305:SP,TW):GOLD		14	3-970-608-51	SUMITITE (B3), +BV	
3	3-073-770-01	COVER, TRAY (NS315:US,CND,PX/NS415)		15	1-961-634-11	PF-127 (HARNESS)	
3	3-073-770-11	COVER, TRAY (NS305:ME,EA,AUS,HK,KR)		16	1-961-632-11	FF-206 (HARNESS)(NS415)	
3	3-073-770-21	COVER, TRAY (NS305:SP,TW):GOLD					
3	3-073-770-31	COVER, TRAY (NS315:MX,E,AR,BR)		17	1-477-167-11	REMOTE COMMANDER (RMT-D141A)	
3	3-074-444-01	COVER, TRAY (NS305:AEP,RUS):BLACK				(NS305:ME,EA,AUS,HK,SP,TW,KR/NS315)	
				17	1-477-168-11	REMOTE COMMANDER (RMT-D142A)	
						(NS415:US,CND)	
3	3-074-444-11	COVER, TRAY (NS305:AEP,UK,RUS/NS310):SILVER		17	1-477-168-41	REMOTE COMMANDER (RMT-D1420)	
						(NS415:ME2,AUS)	
3	3-074-481-01	COVER(EU), TRAY (NS405:AEP):BLACK		17	1-477-169-11	REMOTE COMMANDER (RMT-D141P)	
3	3-074-481-11	COVER(EU), TRAY (NS405/NS410):SILVER				(NS305:AEP,UK,RUS)	
△ 4	1-468-645-11	POWER BLOCK (HS11S1U) (NS305:TW/NS315:US,CND,MX/NS415:US,CND)		17	1-477-170-11	REMOTE COMMANDER (RMT-D142P)	
						(NS310/NS405/NS410)	
△ 4	1-468-646-11	POWER BLOCK (ETXNY381N2F) (NS305:ME,EA,AUS,HK,SP,KR/NS315:AR/NS415:ME,AUS)		18	3-072-138-01	COVER, (SANWA) BATTERY	
						(FOR RMT-D142A/D1420)	
△ 4	1-468-647-11	POWER BLOCK (HS11S1F)(NS315:PX,E,BR)		18	3-071-119-11	COVER, BATTERY (FOR RMT-D141A)	
△ 4	1-468-648-11	POWER BLOCK (ETXNY381E2F) (NS305:AEP,UK,RUS/NS310/NS405/NS410)		18	3-072-140-01	COVER (SMK), BATTERY (FOR RMT-D142P)	
5	3-970-608-01	SUMITITE (B3), +BV		21	1-823-831-11	FAC-9	
△ 10	3-073-182-02	BUSHING, CODE				(NS305:AEP,UK,RUS/NS310/NS405/NS410)	

**Note :**

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

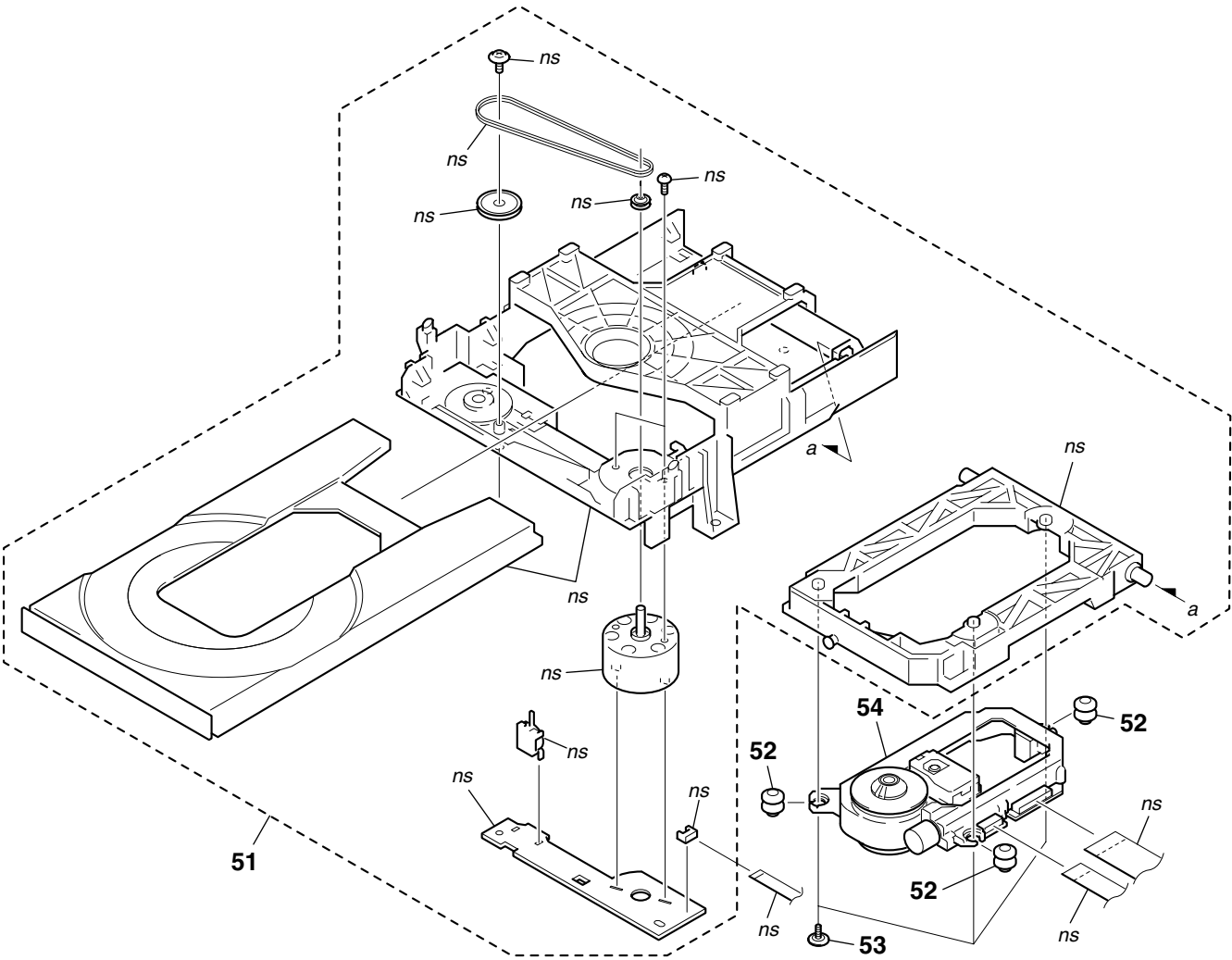
**Note :**

Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.



8-1-2. MECHANISM DECK SECTION

ns : not supplied



Ref. No.	Part No.	Description	Remarks
51	A-6060-556-A	LOADING ASSY (T)	
52	3-053-847-11	INSULATOR	
53	3-067-344-01	INSULATOR SCREW	
54	A-6062-709-A	KHM270AAA SERVICE ASSY	

## 8-2. ELECTRICAL PARTS LIST

### NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked “\*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- CAPACITORS:  
uF:  $\mu$ F  
COILS  
uH:  $\mu$ H

- RESISTORS  
All resistors are in ohms.  
METAL: metal-film resistor  
METAL OXIDE: Metal Oxide-film resistor  
F: nonflammable
- SEMICONDUCTORS  
In each case, u:  $\mu$ , for example:  
uA...:  $\mu$ A..., uPA...,  $\mu$ PA...,  
uPB...,  $\mu$ PB..., uPC...,  $\mu$ PC...,  
uPD...,  $\mu$ PD...
- Abbreviation  
AE1 : AEP model  
AE2 : AEP model  
CND : Canadian model  
RUS : Russian model  
HK : Hong Kong model  
KR : Korea model  
TW : Taiwan model

When indicating parts by reference number, please include the board name.

The components identified by mark  $\Delta$  or dotted line with mark  $\Delta$  are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque  $\Delta$  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

EA : Saudi Arabia model  
SP : Singapore model  
ME : Middle East model  
AUS : Australian model  
MX : Mexico model  
AR : Argentina model  
BR : Brazilian model

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
		AV-61BM (G) BOARD, COMPLETE (NS305:ME,EA,AUS,HK,SP,TW,KR) *****		C213	1-126-934-11	ELECT 220uF 20% 16V	
		AV-61BM (U) BOARD, COMPLETE (NS315:US,CND,PX,AR,BR) *****		C215	1-163-259-91	CERAMIC CHIP 220PF 5% 50V (NS305/NS310/NS405/NS410)	
		AV-61BR (E) BOARD, COMPLETE (NS305:AEP,UK,RUS/NS310) *****		C216	1-163-259-91	CERAMIC CHIP 220PF 5% 50V (NS305/NS310/NS405/NS410)	
		AV-61BX (U) BOARD, COMPLETE (NS315:MX,E) *****		C222	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
		AV-61SM (ME) BOARD, COMPLETE (NS415:ME,AUS) *****		C223	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
		AV-61SM (U) BOARD, COMPLETE (NS415:US,CND) *****		C224	1-126-947-11	ELECT 47uF 20% 16V	
		AV-61SR (E) BOARD, COMPLETE (NS405/NS410) *****		C227	1-126-947-11	ELECT 47uF 20% 16V	
		< CAPACITOR >		C228	1-126-947-11	ELECT 47uF 20% 16V	
C101	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V		C229	1-126-947-11	ELECT 47uF 20% 16V	
C102	1-126-947-11	ELECT 47uF 20% 16V		C242	1-126-924-11	ELECT 330uF 20% 6.3V	
C109	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V		C244	1-126-947-11	ELECT 47uF 20% 16V	
C110	1-126-947-11	ELECT 47uF 20% 16V				< CONNECTOR >	
C111	1-126-947-11	ELECT 47uF 20% 16V		CN102	1-815-149-11	CONNECTOR, FPC/FFC(1MM PIC)21P (NS305:AEP,UK,RUS/NS310/NS405/NS410)	
C112	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V (NS305:ME,EA,AUS,HK,SP,TW,KR/ NS315/NS405/NS410/NS415)		* CN202	1-568-934-11	PIN, CONNECTOR 7P	
C113	1-126-947-11	ELECT 47uF 20% 16V				< DIODE >	
C114	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V		D101	8-719-073-01	DIODE MA111-(K8).S0 (NS415:US,CND)	
C201	1-163-135-00	CERAMIC CHIP 560PF 5% 50V		D105	8-719-071-15	DIODE HZM6.8ZWA1TL (NS305:ME,EA,AUS,HK,SP,TW,KR/ NS315/NS405/NS410/NS415)	
C202	1-163-135-00	CERAMIC CHIP 560PF 5% 50V		D106	8-719-071-15	DIODE HZM6.8ZWA1TL (NS305:ME,EA,AUS,HK,SP,TW,KR/ NS315/NS405/NS410/NS415)	
C203	1-163-257-11	CERAMIC CHIP 180PF 5% 50V		D201	8-719-050-38	DIODE M1MA152WK-T1	
C204	1-163-257-11	CERAMIC CHIP 180PF 5% 50V		D202	8-719-050-37	DIODE M1MA152WA-T1	
C205	1-163-257-11	CERAMIC CHIP 180PF 5% 50V		D203	8-719-050-37	DIODE M1MA152WA-T1 (NS305:AEP,UK,RUS/NS310/NS405/NS410)	
C206	1-163-257-11	CERAMIC CHIP 180PF 5% 50V		D205	8-719-073-01	DIODE MA111-(K8).S0	
C207	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V		D206	8-719-073-01	DIODE MA111-(K8).S0 (NS415:US,CND)	
C208	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V				< IC >	
C209	1-126-960-11	ELECT 1uF 20% 50V		IC102	8-759-826-46	IC LA73051-TLM (NS305:AEP,UK,RUS/NS310/NS405/NS410)	
C210	1-126-947-11	ELECT 47uF 20% 16V		IC102	8-759-826-45	IC LA73050-TLM (NS305:ME,EA,AUS,HK,SP,TW,KR/NS315/NS415)	
C211	1-126-947-11	ELECT 47uF 20% 16V		IC103	8-759-662-86	IC NJM79M05DL1A(TE2)	
C212	1-126-960-11	ELECT 1uF 20% 50V (NS305:AEP,UK,RUS/NS310/NS405/NS410)		IC204	8-749-017-31	IC GP1FA550TZ (NS405/NS410/NS415)	
				IC201	6-701-937-01	IC TJM4558CDT (EXCEPT NS315:MX,E)	
				IC201	8-759-909-71	IC BA4558F-E2 (NS315:MX,E)	
				IC203	8-759-711-59	IC NJM78L05UA-TE1	

Ref. No.	Part No.	Description	Remarks
< JACK >			
J102	1-815-360-11	JACK, PIN 3P (NS305:ME,EA,AUS,HK,SP,TW,KR/NS315/NS415)	
J103	1-794-198-11	CONNECTOR, S TERMINAL (NS305:ME,EA,AUS,HK,SP,TW,KR/NS315/NS405/NS410/NS415)	
J104	1-815-362-21	JACK, PIN (6P) (NS415:US,CND)	
J104	1-815-358-11	JACK, PIN (3P) (NS305/NS310/NS315/NS405/NS410/NS415:ME,AUS)	
J201	1-793-446-21	JACK, PIN 1P	
< JUMPER RESISTOR >			
JR100	1-216-295-91	SHORT	0
JR101	1-216-295-91	SHORT	0
JR102	1-216-295-91	SHORT	0
JR104	1-216-295-91	SHORT	0
JR105	1-216-295-91	SHORT	0
JR106	1-216-295-91	SHORT	0
JR107	1-216-295-91	SHORT	0
JR108	1-216-295-91	SHORT	0
JR109	1-216-295-91	SHORT	0
JR110	1-216-295-91	SHORT	0
JR111	1-216-295-91	SHORT	0
JR112	1-216-295-91	SHORT	0
JR113	1-216-295-91	SHORT	0
< COIL >			
L101	1-412-064-11	INDUCTOR	100uH
< TRANSISTOR >			
Q104	8-729-421-19	TRANSISTOR MUN2213T1 (NS305:ME,EA,AUS,HK,SP,TW,KR/NS315/NS405/NS410/NS415)	
Q105	8-729-424-08	TRANSISTOR UN2111 (NS305:ME,EA,AUS,HK,SP,TW,KR/NS315/NS405/NS410/NS415)	
Q106	8-729-216-22	TRANSISTOR 2SA1162-YG-TE85L (NS305:AEP,UK,RUS/NS310/NS405/NS410)	
Q201	8-729-049-31	TRANSISTOR 2SB710A-RTX	
Q202	8-729-421-19	TRANSISTOR UN2213-TX	
Q203	8-729-230-49	TRANSISTOR 2SC2712-YG-TE85L	
Q204	8-729-027-53	TRANSISTOR DTC124TKA-T146	
Q205	8-729-424-02	TRANSISTOR 2SB709A-QRS-TX	
Q206	8-729-421-19	TRANSISTOR UN2213-TX (NS305:AEP,UK,RUS/NS310/NS405/NS410)	
Q207	6-550-137-01	TRANSISTOR SD1938(F)-ST(TX).SO	
Q208	6-550-137-01	TRANSISTOR SD1938(F)-ST(TX).SO	
Q209	8-729-027-53	TRANSISTOR DTC124TKA-T146 (NS305:AEP,UK,RUS/NS310/NS405/NS410)	
Q210	8-729-424-02	TRANSISTOR 2SB709A-QRS-TX (NS305:AEP,UK,RUS/NS310/NS405/NS410)	
Q211	8-729-230-49	TRANSISTOR 2SC2712-YG-TE85L	
Q216	8-729-424-02	TRANSISTOR 2SB709A-QRS-TX	

Ref. No.	Part No.	Description	Remarks
< RESISTOR >			
R121	1-216-073-91	RES-CHIP 10K 5% 1/10W (NS305:ME,EA,AUS,HK,SP,TW,KR/NS315/NS405/NS410/NS415)	
R122	1-216-049-11	RES-CHIP 1K 5% 1/10W (NS305:AEP,UK,RUS/NS310/NS405/NS410)	
R126	1-216-021-00	METAL CHIP 68 5% 1/10W (NS305:ME,EA,AUS,HK,SP,TW,KR/NS315/NS415)	
R127	1-216-021-00	METAL CHIP 68 5% 1/10W (NS305:ME,EA,AUS,HK,SP,TW,KR/NS315/NS415)	
R128	1-216-021-00	METAL CHIP 68 5% 1/10W (NS305:ME,EA,AUS,HK,SP,TW,KR/NS315/NS415)	
R129	1-216-073-91	RES-CHIP 10K 5% 1/10W (NS305:ME,EA,AUS,HK,SP,TW,KR/NS315/NS405/NS410/NS415)	
R130	1-216-021-00	METAL CHIP 68 5% 1/10W	
R133	1-216-021-00	METAL CHIP 68 5% 1/10W (NS305:ME,EA,AUS,HK,SP,TW,KR/NS315/NS405/NS410/NS415)	
R134	1-216-021-00	METAL CHIP 68 5% 1/10W (NS305:ME,EA,AUS,HK,SP,TW,KR/NS315/NS405/NS410/NS415)	
R153	1-215-860-11	METAL OXIDE 33 5% 1W	
R154	1-216-295-91	SHORT 0 (NS305/NS310/NS315/NS405/NS410/NS415:ME,AUS)	
R201	1-208-798-11	METAL CHIP 4.7K 0.5% 1/10W	
R202	1-208-798-11	METAL CHIP 4.7K 0.5% 1/10W	
R203	1-208-798-11	METAL CHIP 4.7K 0.5% 1/10W	
R204	1-208-798-11	METAL CHIP 4.7K 0.5% 1/10W	
R205	1-208-800-11	METAL CHIP 5.6K 0.5% 1/10W	
R206	1-208-800-11	METAL CHIP 5.6K 0.5% 1/10W	
R207	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R208	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R209	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R210	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R211	1-208-800-11	METAL CHIP 5.6K 0.5% 1/10W	
R212	1-208-800-11	METAL CHIP 5.6K 0.5% 1/10W	
R213	1-216-065-91	RES-CHIP 4.7K 5% 1/10W	
R214	1-216-065-91	RES-CHIP 4.7K 5% 1/10W (NS305:AEP,UK,RUS/NS310/NS405/NS410)	
R216	1-216-067-00	METAL CHIP 5.6K 5% 1/10W	
R217	1-216-073-91	RES-CHIP 10K 5% 1/10W	
R218	1-216-097-11	RES-CHIP 100K 5% 1/10W	
R219	1-216-105-91	RES-CHIP 220K 5% 1/10W	
R220	1-216-041-00	METAL CHIP 470 5% 1/10W	
R221	1-216-073-91	RES-CHIP 10K 5% 1/10W	
R222	1-216-073-91	RES-CHIP 10K 5% 1/10W	
R224	1-216-073-91	RES-CHIP 10K 5% 1/10W	
R225	1-216-089-91	RES-CHIP 47K 5% 1/10W	
R226	1-216-041-00	METAL CHIP 470 5% 1/10W	
R227	1-216-041-00	METAL CHIP 470 5% 1/10W	
R228	1-216-073-91	RES-CHIP 10K 5% 1/10W	
R229	1-216-089-91	RES-CHIP 47K 5% 1/10W	
R230	1-216-089-91	RES-CHIP 47K 5% 1/10W	
R231	1-216-073-91	RES-CHIP 10K 5% 1/10W (NS305:AEP,UK,RUS/NS310/NS405/NS410)	

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
R232	1-216-073-91	RES-CHIP 10K 5% 1/10W (NS305:AEP,UK,RUS/NS310/NS405/NS410)				< DIODE >	
R233	1-216-089-91	RES-CHIP 47K 5% 1/10W (NS305:AEP,UK,RUS/NS310/NS405/NS410)		D901	8-719-073-01	DIODE MA111-(K8).S0	
R234	1-216-065-91	RES-CHIP 4.7K 5% 1/10W		D907	8-719-050-37	DIODE M1MA152WA-T1	
R235	1-216-065-91	RES-CHIP 4.7K 5% 1/10W (NS305:ME,EA,AUS,HK,SP,TW,KR/NS315/NS415)		D917	8-719-067-40	DIODE STZ6.8N-T146	
R236	1-216-073-91	RES-CHIP 10K 5% 1/10W (NS305:AEP,UK,RUS/NS310/NS405/NS410)		D918	8-719-067-40	DIODE STZ6.8N-T146	
				D919	8-719-067-40	DIODE STZ6.8N-T146	
R237	1-216-065-91	RES-CHIP 4.7K 5% 1/10W (NS305:AEP,UK,RUS/NS310/NS405/NS410)		D920	8-719-067-40	DIODE STZ6.8N-T146	
R238	1-216-097-11	RES-CHIP 100K 5% 1/10W		D929	8-719-056-82	DIODE UDZ-TE-17-6.2B	
R239	1-216-097-11	RES-CHIP 100K 5% 1/10W (NS305:AEP,UK,RUS/NS310/NS405/NS410)		D930	8-719-977-40	DIODE UDZ-TE-17-13B	
R240	1-216-041-00	METAL CHIP 470 5% 1/10W				< FERRITE BEAD >	
R241	1-216-041-00	METAL CHIP 470 5% 1/10W		FB907	1-414-766-22	FERRITE 0uH	
				FB908	1-414-766-22	FERRITE 0uH	
R244	1-216-089-91	RES-CHIP 47K 5% 1/10W (NS415:US,CND)		FB909	1-414-766-22	FERRITE 0uH	
R245	1-216-089-91	RES-CHIP 47K 5% 1/10W (NS415:US,CND)		FB910	1-414-766-22	FERRITE 0uH	
R249	1-216-033-00	METAL CHIP 220 5% 1/10W				< IC >	
R251	1-216-021-00	METAL CHIP 68 5% 1/10W		IC901	8-759-826-47	IC LA73052-TLM	
R252	1-216-073-91	RES-CHIP 10K 5% 1/10W				< JUMPER RESISTOR >	
R253	1-216-049-11	RES-CHIP 1K 5% 1/10W		JR901	1-216-295-91	SHORT 0	
R254	1-216-049-11	RES-CHIP 1K 5% 1/10W		JR902	1-216-295-91	SHORT 0	
R256	1-216-049-11	RES-CHIP 1K 5% 1/10W		JR905	1-216-295-91	SHORT 0	
R284	1-216-295-91	SHORT 0 (NS305/NS310/NS315/NS405/NS410/NS415:ME,AUS)		JR906	1-216-295-91	SHORT 0	
R285	1-216-295-91	SHORT 0 (NS305/NS310/NS315/NS405/NS410/NS415:ME,AUS)		JR907	1-216-295-91	SHORT 0	
R286	1-216-295-91	SHORT 0		JR908	1-216-295-91	SHORT 0	
		< RELAY >		JR909	1-216-295-91	SHORT 0	
RY102	1-755-037-11	RELAY (NS415:US,CND)		JR910	1-216-295-91	SHORT 0	
RY201	1-755-466-11	RELAY (PLASTIC SEAL) (NS415:US,CND)		JR911	1-216-295-91	SHORT 0	
				JR912	1-216-295-91	SHORT 0	
				JR913	1-216-295-91	SHORT 0	
				JR914	1-216-295-91	SHORT 0	
				JR915	1-216-295-91	SHORT 0	
						< COIL >	
		ER-14R BOARD, COMPLETE (NS305:AEP, UK, RUS/NS310/NS405/NS410) *****		L905	1-412-064-11	INDUCTOR 100uH	
		< CAPACITOR >				< TRANSISTOR >	
C901	1-126-947-11	ELECT 47uF 20% 16V		Q901	8-729-421-19	TRANSISTOR UN2213-TX	
C902	1-126-947-11	ELECT 47uF 20% 16V		Q902	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX	
C903	1-126-947-11	ELECT 47uF 20% 16V		Q903	8-729-424-08	TRANSISTOR UN2111-TX	
C905	1-126-947-11	ELECT 47uF 20% 16V		Q906	8-729-421-19	TRANSISTOR UN2213-TX	
C907	1-126-947-11	ELECT 47uF 20% 16V		Q907	8-729-424-08	TRANSISTOR UN2111-TX	
C913	1-127-715-91	CERAMIC CHIP 0.22uF 10% 16V		Q908	8-729-421-22	TRANSISTOR UN2211-TX	
C914	1-127-715-91	CERAMIC CHIP 0.22uF 10% 16V				< RESISTOR >	
C943	1-162-927-11	CERAMIC CHIP 100PF 5% 50V		R902	1-216-295-91	SHORT 0	
C945	1-162-927-11	CERAMIC CHIP 100PF 5% 50V		R905	1-216-089-91	RES-CHIP 47K 5% 1/10W	
C962	1-162-927-11	CERAMIC CHIP 100PF 5% 50V		R906	1-216-089-91	RES-CHIP 47K 5% 1/10W	
C963	1-162-927-11	CERAMIC CHIP 100PF 5% 50V		R907	1-216-089-91	RES-CHIP 47K 5% 1/10W	
		< CONNECTOR >		R908	1-216-105-91	RES-CHIP 220K 5% 1/10W	
CN901	1-815-387-11	CONNECTOR, FPC/FFC 21P		R909	1-216-037-00	METAL CHIP 330 5% 1/10W	
				R910	1-216-037-00	METAL CHIP 330 5% 1/10W	
				R911	1-216-037-00	METAL CHIP 330 5% 1/10W	
				R912	1-216-037-00	METAL CHIP 330 5% 1/10W	
				R914	1-216-055-00	METAL CHIP 1.8K 5% 1/10W	

## ER-14

## FL-126

## IF-89

Ref. No.	Part No.	Description	Remarks
R915	1-216-045-00	METAL CHIP 680 5%	1/10W
R916	1-216-055-00	METAL CHIP 1.8K 5%	1/10W
R917	1-216-055-00	METAL CHIP 1.8K 5%	1/10W
R918	1-216-021-00	METAL CHIP 68 5%	1/10W
R924	1-216-041-00	METAL CHIP 470 5%	1/10W
R926	1-216-041-00	METAL CHIP 470 5%	1/10W
R927	1-216-021-00	METAL CHIP 68 5%	1/10W
R928	1-216-021-00	METAL CHIP 68 5%	1/10W
R929	1-216-021-00	METAL CHIP 68 5%	1/10W
R939	1-216-017-91	RES-CHIP 47 5%	1/10W
R950	1-216-081-00	METAL CHIP 22K 5%	1/10W
R957	1-414-233-22	FERRITE 0UH	
R958	1-414-233-22	FERRITE 0UH	

## FL-126 (E) BOARD, COMPLETE (NS415)

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## &lt; CONNECTOR &gt;

CN301 1-564-013-11 PIN, CONNECTOR 3P

## &lt; DIODE &gt;

D301 6-500-176-01 DIODE EB3804X-TP-J555K

## &lt; RESISTOR &gt;

R301 1-216-033-00 METAL CHIP 220 5% 1/10W

## IF-89BM (U) BOARD, COMPLETE

(NS305:ME,EA,AUS,HK,SP,TW,KR/  
NS315:US,CND,PX,AR,BR)

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## IF-89BX (U) BOARD, COMPLETE (NS315:MX,E)

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## IF-89SM (U) BOARD, COMPLETE (NS415)

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## IF-89BR (E) BOARD, COMPLETE

(NS305:AEP,UK,RUS/NS310)

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## IF-89SR (E) BOARD, COMPLETE

(NS405/NS410)

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## &lt; CAPACITOR &gt;

C401	1-126-947-11	ELECT 47uF 20%	16V
C402	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
C404	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
C405	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
C407	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
C408	1-119-774-11	ELECT 100uF 20%	16V
C409	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
C411	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
C414	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
C415	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V
C416	1-104-665-11	ELECT 100uF 20%	25V
C417	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
C418	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
C420	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
C421	1-128-551-11	ELECT 22uF 20%	25V

Ref. No.	Part No.	Description	Remarks
C423	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
C424	1-107-826-11	CERAMIC CHIP 0.1uF 10%	16V
C425	1-128-551-11	ELECT 22uF 20%	25V
C426	1-163-021-91	CERAMIC CHIP 0.01uF 10%	50V
C427	1-107-826-11	CERAMIC CHIP 0.1uF 10%	16V
C428	1-107-826-11	CERAMIC CHIP 0.1uF 10%	16V
< CONNECTOR >			
CN401	1-506-478-11	PIN, CONNECTOR 13P	
* CN405	1-785-530-11	PIN, CONNECTOR (PC BOARD) 10P	
		(NS305/NS310/NS315:US,CND,PX,AR,BR/NS405/NS410/NS415)	
CN406	1-564-002-11	PIN, CONNECTOR 3P (NS415)	
< DIODE >			
D402	8-719-064-11	DIODE SPR-325MVW (NS405/NS410/NS415)	
< IC >			
IC403	6-701-875-01	IC LMS8117ADTX-1.8/NOPB	
IC404	6-801-258-01	IC 86CK74AFG-3ND0(M	
IC405	8-759-684-35	IC S-80830ANUP-EDT-T2	
IC406	6-600-054-01	IC GP1UD24SYK	
IC407	6-701-835-01	IC AN13990A-NML	
< JUMPER RESISTOR >			
JR401	1-216-295-91	SHORT 0	
JR402	1-216-295-91	SHORT 0	
JR403	1-216-295-91	SHORT 0	
JR404	1-216-295-91	SHORT 0	
JR405	1-216-295-91	SHORT 0	
JR406	1-216-295-91	SHORT 0	
JR407	1-216-295-91	SHORT 0	
JR408	1-216-295-91	SHORT 0	
JR409	1-216-295-91	SHORT 0	
JR410	1-216-295-91	SHORT 0	
JR411	1-216-295-91	SHORT 0	
JR412	1-216-295-91	SHORT 0	
JR413	1-216-295-91	SHORT 0	
JR414	1-216-295-91	SHORT 0	
JR415	1-216-295-91	SHORT 0	
JR416	1-216-295-91	SHORT 0	
JR417	1-216-295-91	SHORT 0	
JR418	1-216-295-91	SHORT 0	
JR419	1-216-295-91	SHORT 0	
JR420	1-216-295-91	SHORT 0	
< FLUORESCENT INDICATOR >			
ND401	1-518-805-11	TUBE, FLUORESCENT INDICATOR	
		(NS305:ME,EA,AUS,HK,SP,TW,KR/NS315/NS415)	
ND401	1-518-807-11	TUBE, FLUORESCENT INDICATOR	
		(NS305:AEP,UK,RUS/NS310/NS405/NS410)	
< IC LINK >			
△ PS401	1-576-509-21	RINK, IC	
△ PS402	1-576-508-21	RINK, IC	
< TRANSISTOR >			
Q404	8-729-048-28	TRANSISTOR 2SD1766-T100-QR	
Q405	8-729-424-08	TRANSISTOR UN2111-TX	

## Note :

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

## Note :

Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remarks		
		< RESISTOR >			
R401	1-216-017-91	RES-CHIP	47	5%	1/10W
R402	1-216-097-11	RES-CHIP	100K	5%	1/10W
R405	1-216-081-00	METAL CHIP	22K	5%	1/10W
R406	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R407	1-216-013-00	METAL CHIP	33	5%	1/10W
R408	1-216-073-91	RES-CHIP	10K	5%	1/10W
R409	1-216-063-91	RES-CHIP	3.9K	5%	1/10W
R410	1-216-063-91	RES-CHIP	3.9K	5%	1/10W
		(NS405/NS410/NS415)			
R411	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R412	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R413	1-216-073-91	RES-CHIP	10K	5%	1/10W
R414	1-216-073-91	RES-CHIP	10K	5%	1/10W
R415	1-216-073-91	RES-CHIP	10K	5%	1/10W
R416	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R417	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R418	1-216-027-00	METAL CHIP	120	5%	1/10W
R424	1-216-073-91	RES-CHIP	10K	5%	1/10W
R425	1-216-073-91	RES-CHIP	10K	5%	1/10W
R426	1-216-073-91	RES-CHIP	10K	5%	1/10W
R428	1-216-025-11	RES-CHIP	100	5%	1/10W
R429	1-216-073-91	RES-CHIP	10K	5%	1/10W
R430	1-216-073-91	RES-CHIP	10K	5%	1/10W
R432	1-216-073-91	RES-CHIP	10K	5%	1/10W
R434	1-216-097-11	RES-CHIP	100K	5%	1/10W
R436	1-216-073-91	RES-CHIP	10K	5%	1/10W
		(NS405/NS410/NS415)			
R437	1-216-073-91	RES-CHIP	10K	5%	1/10W
		(NS305/NS310/NS315)			
R438	1-216-073-91	RES-CHIP	10K	5%	1/10W
R441	1-216-073-91	RES-CHIP	10K	5%	1/10W
R442	1-216-025-11	RES-CHIP	100	5%	1/10W
R443	1-216-025-11	RES-CHIP	100	5%	1/10W
R444	1-216-025-11	RES-CHIP	100	5%	1/10W
R445	1-216-025-11	RES-CHIP	100	5%	1/10W
R446	1-216-025-11	RES-CHIP	100	5%	1/10W
R447	1-216-025-11	RES-CHIP	100	5%	1/10W
R448	1-216-025-11	RES-CHIP	100	5%	1/10W
R452	1-216-029-00	METAL CHIP	150	5%	1/10W
		(NS405/NS410/NS415)			
R453	1-215-857-11	METAL OXIDE	10	5%	1W
R455	1-216-427-00	METAL OXIDE	120	5%	1W
R456	1-216-427-00	METAL OXIDE	120	5%	1W
R457	1-216-029-00	METAL CHIP	150	5%	1/10W
		(NS405/NS410/NS415)			
R458	1-216-081-00	METAL CHIP	22K	5%	1/10W
		(NS405/NS410/NS415)			
R459	1-216-298-00	METAL CHIP	2.2	5%	1/10W
R460	1-216-073-91	RES-CHIP	10K	5%	1/10W
		< SWITCH >			
S401	1-771-349-21	SWITCH, KEYBOARD			
S402	1-771-349-21	SWITCH, KEYBOARD			
S403	1-771-349-21	SWITCH, KEYBOARD			
S404	1-771-349-21	SWITCH, KEYBOARD			
S405	1-771-349-21	SWITCH, KEYBOARD			

Ref. No.	Part No.	Description	Remarks		
S406	1-771-349-21	SWITCH, KEYBOARD			
S407	1-771-349-21	SWITCH, KEYBOARD			
S408	1-771-349-21	SWITCH, KEYBOARD			
S409	1-771-349-21	SWITCH, KEYBOARD (NS405/NS410/NS415)			
		< VIBRATOR >			
X401	1-781-472-21	VIBRATOR, CERAMIC (8MHz)			
		MB-103BM (GA) BOARD, COMPLETE			
		(NS305:HK,SP,TW,KR)			
		*****			
		MB-103BM (IN) BOARD, COMPLETE			
		(NS305:ME5)			
		*****			
		MB-103BM (ME) BOARD, COMPLETE			
		(NS305:EA,ME2)			
		*****			
		MB-103BM (OC) BOARD, COMPLETE			
		(NS305:AUS)			
		*****			
		MB-103BM (UC) BOARD, COMPLETE			
		(NS315:US,CND,PX)			
		*****			
		MB-103BR (E1) BOARD, COMPLETE			
		(NS305:AE1,UK/NS310:AE1)			
		*****			
		MB-103BR (E2) BOARD, COMPLETE			
		(NS305:AE2/NS310:AE2)			
		*****			
		MB-103BR (RU) BOARD, COMPLETE			
		(NS305:RUS)			
		*****			
		MB-103BX (LA) BOARD, COMPLETE			
		(NS315:MX,E,AR,BR)			
		*****			
		MB-103SM (ME) BOARD, COMPLETE			
		(NS415:ME)			
		*****			
		MB-103SM (OC) BOARD, COMPLETE			
		(NS415:AUS)			
		*****			
		MB-103SM (UC) BOARD, COMPLETE			
		(NS415:US,CND)			
		*****			
		MB-103SR (E1) BOARD, COMPLETE			
		(NS405:AE1,UK/NS410:AE1)			
		*****			
		MB-103SR (E2) BOARD, COMPLETE			
		(NS405:AE2/NS410:AE2)			
		*****			
		< CAPACITOR >			
C102	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C103	1-126-209-11	ELECT CHIP	100uF	20%	4V
C104	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C105	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C106	1-162-916-11	CERAMIC CHIP	12PF	5%	50V
		(NS305:AEP,UK,RUS/NS310/NS405/NS410)			
C106	1-162-914-11	CERAMIC CHIP	9PF	0.50PF	50V
		(NS305:ME,EA,AUS,HK,SP,TW,KR/NS315/NS415)			
C107	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
		(NS305:AEP,UK,RUS/NS310/NS405/NS410)			
C107	1-162-914-11	CERAMIC CHIP	9PF	0.50PF	50V
		(NS305:ME,EA,AUS,HK,SP,TW,KR/NS315/NS415)			
C108	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C109	1-126-209-11	ELECT CHIP	100uF	20%	4V

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Ref. No.	Part No.	Description	Remarks			Ref. No.	Part No.	Description	Remarks		
C110	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C262	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C111	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C263	1-124-779-00	ELECT CHIP	10uF	20%	16V
C114	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C264	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C118	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C265	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C120	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C266	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C121	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C270	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C122	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C271	1-126-204-11	ELECT CHIP	47uF	20%	16V
C125	1-126-607-11	ELECT CHIP	47uF	20%	4V	C272	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C126	1-126-206-11	ELECT CHIP	100uF	20%	6.3V	C273	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C127	1-126-204-11	ELECT CHIP	47uF	20%	16V	C304	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C128	1-126-246-11	ELECT CHIP	220uF	20%	4V	C305	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C129	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C308	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C201	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C309	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C202	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C310	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C203	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	C311	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C204	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	C312	1-110-563-11	CERAMIC CHIP	0.068uF	10%	16V
C210	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V	C313	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C211	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V	C314	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C212	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V	C315	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C213	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V	C316	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C214	1-164-245-11	CERAMIC CHIP	0.015uF	10%	25V	C317	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C215	1-162-927-11	CERAMIC CHIP	100PF	5%	50V	C318	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C216	1-164-230-11	CERAMIC CHIP	220PF	5%	50V	C319	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C218	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V	C320	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C219	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C321	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C220	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C322	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C221	1-124-779-00	ELECT CHIP	10uF	20%	16V	C323	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C225	1-162-927-11	CERAMIC CHIP	100PF	5%	50V	C324	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C226	1-164-230-11	CERAMIC CHIP	220PF	5%	50V	C325	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C228	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	C326	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C229	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	C327	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C230	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V	C328	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C232	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V	C329	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C233	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V	C330	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C234	1-126-205-11	ELECT CHIP	47uF	20%	6.3V	C331	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C235	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C332	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C236	1-164-739-11	CERAMIC CHIP	560PF	5%	50V	C333	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C238	1-124-779-00	ELECT CHIP	10uF	20%	16V	C334	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C240	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V	C335	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C241	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C337	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C242	1-126-205-11	ELECT CHIP	47uF	20%	6.3V	C338	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C243	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C339	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C244	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C340	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C245	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C343	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C246	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V	C344	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C247	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C401	1-124-779-00	ELECT CHIP	10uF	20%	16V
C248	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C402	1-124-779-00	ELECT CHIP	10uF	20%	16V
C249	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C403	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C250	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C404	1-126-193-11	ELECT	1uF	20%	50V
C251	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C405	1-126-246-11	ELECT CHIP	220uF	20%	4V
C252	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C406	1-124-779-00	ELECT CHIP	10uF	20%	16V
C253	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	C407	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C254	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C408	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C255	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C410	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C256	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V	C412	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C257	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V	C413	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C258	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C415	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C259	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	C416	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C260	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C417	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C261	1-162-959-11	CERAMIC CHIP	330PF	5%	50V	C418	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
C419	1-107-826-11	CERAMIC CHIP 0.1uF 10%	16V	< IC >			
C420	1-107-826-11	CERAMIC CHIP 0.1uF 10%	16V	IC101	8-759-640-41	IC BR24C08F-E2 (NS305/NS310/NS315)	
C422	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V	IC101	8-759-641-86	IC BR24C16F-E2 (NS405/NS410/NS415)	
C423	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V	IC103	6-701-879-01	IC CY24233ZCT (NS305: AEP,UK,RUS/NS310/NS405/NS410)	
C425	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V	IC103	6-701-877-01	IC SM8707EV-G-E2 (NS305: ME,EA,AUS,HK,SP,TW,KR/NS315/NS415)	
C426	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V	IC104	6-701-837-01	IC MB91307RPFV-G-BND-E1	
C428	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V	IC107	6-801-925-01	IC MR27V1602E-AETPZ04B (NS315)	
C429	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V	IC107	6-801-926-01	IC MR27V1602E-AFTPZ04B (NS305: AE1,UK/NS310: AE1/NS405: AE1,UK/NS410: AE1)	
C431	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V	IC107	6-801-927-01	IC MR27V1602E-AGTPZ04B (NS305: AE2/NS310: AE2/NS405: AE2/NS410: AE2)	
C432	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V	IC107	6-801-928-01	IC MR27V1602E-AHTPZ04B (NS305: RUS)	
C435	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V	IC107	6-801-930-01	IC MR27V1602E-AKTPZ04B (NS305: ME,EA,AUS/NS415)	
C436	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V				
C438	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V	IC107	6-801-931-01	IC MR27V1602E-ALTPZ04B (NS305: HK,SP,TW,KR)	
C439	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V	IC201	6-701-700-01	IC SP3728ACB	
C441	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V (NS305/NS310/NS405/NS410/NS415: ME,AUS)	IC202	6-701-878-01	IC FAN8034L	
C442	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V (NS305/NS310/NS405/NS410/NS415: ME,AUS)	IC301	6-701-876-01	IC CXD9703R	
C446	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V (NS305/NS310/NS405/NS410/NS415: ME,AUS)	IC302	8-759-599-45	IC MM1385ENLE	
C447	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V (NS305/NS310/NS405/NS410/NS415: ME,AUS)	IC303	6-701-969-01	IC K4F151612D-UL60T	
C449	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V	IC401	6-702-300-01	IC TK11118CSCL-G	
C602	1-127-715-91	CERAMIC CHIP 0.22uF 10%	16V	IC402	8-759-599-45	IC MM1385ENLE	
C603	1-124-779-00	ELECT CHIP 10uF 20%	16V	IC403	8-752-416-45	IC CXD1935Q	
C604	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V	IC404	6-700-353-01	IC MT48LC1M16A1TG-6STR	
< CONNECTOR >				IC405	6-700-353-01	IC MT48LC1M16A1TG-6STR (NS305/NS310/NS405/NS410/NS415: ME,AUS)	
* CN102	1-770-154-11	PIN, CONNECTOR (PC BOARD) 6P		IC601	6-701-565-01	IC CXD9627A-E2	
* CN103	1-770-470-21	PIN, CONNECTOR (PC BOARD) 6P		< COIL >			
CN203	1-815-507-21	CONNECTOR, FFC/FPC 26P		L101	1-412-028-11	INDUCTOR CHIP 4.7uH	
< FERRITE BEAD >				L201	1-412-031-11	INDUCTOR CHIP 47uH	
FB103	1-469-324-21	FERRITE 0uH		L202	1-412-031-11	INDUCTOR CHIP 47uH	
FB104	1-469-324-21	FERRITE 0uH		< TRANSISTOR >			
FB105	1-469-324-21	FERRITE 0uH		Q201	8-729-903-46	TRANSISTOR 2SB1132-T100-QR	
FB106	1-469-324-21	FERRITE 0uH		Q202	8-729-903-46	TRANSISTOR 2SB1132-T100-QR	
FB107	1-469-324-21	FERRITE 0uH		< RESISTOR >			
FB108	1-469-324-21	FERRITE 0uH		R103	1-216-809-11	METAL CHIP 100 5% 1/16W	
FB109	1-469-324-21	FERRITE 0uH		R104	1-216-809-11	METAL CHIP 100 5% 1/16W	
FB111	1-469-324-21	FERRITE 0uH		R105	1-216-809-11	METAL CHIP 100 5% 1/16W	
FB602	1-414-226-21	FERRITE 0uH		R106	1-216-809-11	METAL CHIP 100 5% 1/16W	
FB603	1-414-226-21	FERRITE 0uH		R108	1-216-789-11	METAL CHIP 2.2 5% 1/16W	
< FILTER >				R110	1-216-821-11	METAL CHIP 1K 5% 1/16W	
FL101	1-234-177-21	FILTER, CHIP EMI		R111	1-216-809-11	METAL CHIP 100 5% 1/16W	
FL102	1-234-177-21	FILTER, CHIP EMI		R112	1-216-809-11	METAL CHIP 100 5% 1/16W	
FL103	1-234-177-21	FILTER, CHIP EMI		R113	1-216-837-11	METAL CHIP 22K 5% 1/16W	
FL104	1-234-177-21	FILTER, CHIP EMI		R114	1-216-821-11	METAL CHIP 1K 5% 1/16W (NS305: AEP,UK,RUS/NS310/NS405/NS410)	
FL105	1-234-177-21	FILTER, CHIP EMI		R114	1-216-864-11	SHORT 0 (NS305: ME,EA,AUS,HK,SP,TW,KR/NS315/NS415)	
FL106	1-234-177-21	FILTER, CHIP EMI		R116	1-216-801-11	METAL CHIP 22 5% 1/16W	
FL109	1-233-893-21	FILTER, CHIP EMI		R117	1-216-821-11	METAL CHIP 1K 5% 1/16W	
FL110	1-234-177-21	FILTER, CHIP EMI		R118	1-216-845-11	METAL CHIP 100K 5% 1/16W	
FL201	1-234-177-21	FILTER, CHIP EMI		R119	1-216-845-11	METAL CHIP 100K 5% 1/16W	
FL402	1-234-177-21	FILTER, CHIP EMI					
FL403	1-234-177-21	FILTER, CHIP EMI					
FL404	1-234-177-21	FILTER, CHIP EMI					



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Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
R120	1-216-821-11	METAL CHIP	1K 5% 1/16W	R206	1-216-829-11	METAL CHIP	4.7K 5% 1/10W
R121	1-216-821-11	METAL CHIP	1K 5% 1/16W	R207	1-216-809-11	METAL CHIP	100 5% 1/10W
R123	1-216-833-11	METAL CHIP	10K 5% 1/16W	R210	1-216-815-11	METAL CHIP	330 5% 1/10W
R124	1-216-833-11	METAL CHIP	10K 5% 1/16W	R211	1-216-809-11	METAL CHIP	100 5% 1/10W
R128	1-216-809-11	METAL CHIP	100 5% 1/16W	R212	1-216-809-11	METAL CHIP	100 5% 1/10W
R129	1-216-809-11	METAL CHIP	100 5% 1/16W	R213	1-216-833-11	METAL CHIP	10K 5% 1/10W
R130	1-216-809-11	METAL CHIP	100 5% 1/16W	R214	1-216-833-11	METAL CHIP	10K 5% 1/10W
R131	1-216-809-11	METAL CHIP	100 5% 1/16W	R216	1-216-821-11	METAL CHIP	1K 5% 1/10W
R132	1-216-864-11	METAL CHIP	0	R217	1-216-821-11	METAL CHIP	1K 5% 1/10W
R133	1-216-864-11	METAL CHIP	0	R218	1-216-846-11	METAL CHIP	120K 5% 1/10W
R134	1-216-801-11	METAL CHIP	22 5% 1/10W	R219	1-216-846-11	METAL CHIP	120K 5% 1/10W
R136	1-216-801-11	METAL CHIP	22 5% 1/10W	R220	1-216-847-11	METAL CHIP	150K 5% 1/10W
R137	1-216-801-11	METAL CHIP	22 5% 1/10W	R221	1-216-847-11	METAL CHIP	150K 5% 1/10W
R139	1-216-827-11	METAL CHIP	3.3K 5% 1/10W	R222	1-216-842-11	METAL CHIP	56K 5% 1/10W
R141	1-216-833-11	METAL CHIP	10K 5% 1/10W	R223	1-216-842-11	METAL CHIP	56K 5% 1/10W
R150	1-216-833-11	METAL CHIP	10K 5% 1/10W	R224	1-216-850-11	METAL CHIP	270K 5% 1/10W
R156	1-216-833-11	METAL CHIP	10K 5% 1/10W	R225	1-216-833-11	METAL CHIP	10K 5% 1/10W
R157	1-216-864-11	METAL CHIP	0	R226	1-216-853-11	METAL CHIP	470K 5% 1/10W
R159	1-216-864-11	METAL CHIP	0	R227	1-216-846-11	METAL CHIP	120K 5% 1/10W
R160	1-216-864-11	METAL CHIP	0	R229	1-216-833-11	METAL CHIP	10K 5% 1/10W
R162	1-216-827-11	METAL CHIP	3.3K 5% 1/10W	R230	1-216-839-11	METAL CHIP	33K 5% 1/10W
R163	1-216-827-11	METAL CHIP	3.3K 5% 1/16W	R231	1-216-855-11	METAL CHIP	680K 5% 1/10W
R164	1-216-041-00	METAL CHIP	470 5% 1/10W (NS305:AUS/NS415:AUS)	R232	1-216-839-11	METAL CHIP	33K 5% 1/10W
R164	1-216-047-91	RES-CHIP	820 5% 1/10W (NS305:EA,ME2/NS415:ME)	R233	1-216-853-11	METAL CHIP	470K 5% 1/10W
R164	1-216-057-00	METAL CHIP	2.2K 5% 1/10W (NS305:HK,SP,TW,KR)	R234	1-216-803-11	METAL CHIP	33 5% 1/10W
R164	1-216-065-91	RES-CHIP	4.7K 5% 1/10W (NS305:RUS)	R235	1-216-809-11	METAL CHIP	100 5% 1/10W
R164	1-216-069-00	METAL CHIP	6.8K 5% 1/10W (NS305:AE2/NS310:AE2/NS405:AE2/NS410:AE2)	R236	1-216-803-11	METAL CHIP	33 5% 1/10W
R164	1-216-075-00	METAL CHIP	12K 5% 1/10W (NS305:AE1,UK/NS310:AE1/NS405:AE1,UK/NS410:AE1)	R238	1-216-839-11	METAL CHIP	33K 5% 1/10W
R164	1-216-081-00	METAL CHIP	22K 5% 1/10W (NS315:MX,E,AR,BR)	R239	1-216-839-11	METAL CHIP	33K 5% 1/10W
R164	1-216-654-11	METAL CHIP	1.3K 0.5% 1/10W (NS305:ME5)	R240	1-216-839-11	METAL CHIP	33K 5% 1/10W
R165	1-216-827-11	METAL CHIP	3.3K 5% 1/10W	R241	1-216-839-11	METAL CHIP	33K 5% 1/10W
R166	1-216-089-91	RES-CHIP	47K 5% 1/10W (NS405/NS410/NS415)	R242	1-216-849-11	METAL CHIP	220K 5% 1/10W
R168	1-216-827-11	METAL CHIP	3.3K 5% 1/16W	R243	1-216-853-11	METAL CHIP	470K 5% 1/10W
R169	1-216-069-00	METAL CHIP	6.8K 5% 1/10W (NS305:RUS)	R244	1-216-821-11	METAL CHIP	1K 5% 1/10W
R169	1-216-089-91	RES-CHIP	47K 5% 1/10W (NS305:AEP,UK,ME,EA/NS310/NS405/NS410/NS415:ME)	R245	1-216-841-11	METAL CHIP	47K 5% 1/10W
R169	1-216-075-00	METAL CHIP	12K 5% 1/10W (NS305:AUS/NS315:MX,E,AR,BR/NS415:AUS)	R246	1-216-809-11	METAL CHIP	100 5% 1/10W
R169	1-216-081-00	METAL CHIP	22K 5% 1/10W (NS305:HK,SP,TW,KR)	R248	1-216-803-11	METAL CHIP	33 5% 1/10W
R176	1-216-864-11	METAL CHIP	0	R249	1-216-803-11	METAL CHIP	33 5% 1/10W
R178	1-216-833-11	METAL CHIP	10K 5% 1/16W	R250	1-218-895-11	METAL CHIP	100K 0.5% 1/10W
R180	1-216-809-11	METAL CHIP	100 5% 1/16W	R251	1-216-841-11	METAL CHIP	47K 5% 1/10W
R181	1-216-864-11	METAL CHIP	0	R252	1-216-839-11	METAL CHIP	33K 5% 1/10W
R182	1-216-809-11	METAL CHIP	100 5% 1/10W	R253	1-218-889-11	METAL CHIP	56K 0.5% 1/10W
R183	1-216-809-11	METAL CHIP	100 5% 1/10W	R254	1-218-895-11	METAL CHIP	100K 0.5% 1/10W
R184	1-216-833-11	METAL CHIP	10K 5% 1/10W	R255	1-218-889-11	METAL CHIP	56K 0.5% 1/10W
R185	1-216-821-11	METAL CHIP	1K 5% 1/10W	R256	1-216-809-11	METAL CHIP	100 5% 1/10W
				R259	1-216-833-11	METAL CHIP	10K 5% 1/10W
				R260	1-216-834-11	METAL CHIP	12K 5% 1/10W
				R261	1-216-833-11	METAL CHIP	10K 5% 1/10W
				R262	1-216-815-11	METAL CHIP	330 5% 1/10W
				R263	1-216-861-11	METAL CHIP	2.2M 5% 1/10W
				R264	1-216-845-11	METAL CHIP	100K 5% 1/10W
				R265	1-216-838-11	METAL CHIP	27K 5% 1/10W
				R269	1-216-833-11	METAL CHIP	10K 5% 1/10W
				R273	1-216-864-11	SHORT	0
				R301	1-216-295-91	SHORT	0

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**POWER (HS11S1U)**
**POWER (HS11S1F)**

Ref. No.	Part No.	Description	Remarks
R302	1-216-295-91	SHORT	0
R303	1-216-821-11	METAL CHIP	1K 5% 1/10W
R311	1-216-809-11	METAL CHIP	100 5% 1/10W
R312	1-218-831-11	METAL CHIP	220 0.5% 1/10W
R313	1-216-817-11	METAL CHIP	470 5% 1/10W
R314	1-216-817-11	METAL CHIP	470 5% 1/10W
R315	1-216-817-11	METAL CHIP	470 5% 1/10W
R316	1-216-829-11	METAL CHIP	4.7K 5% 1/10W
R317	1-216-833-11	METAL CHIP	10K 5% 1/10W
R318	1-216-817-11	METAL CHIP	470 5% 1/10W
R319	1-218-871-11	METAL CHIP	10K 0.5% 1/10W
R320	1-218-883-11	METAL CHIP	33K 0.5% 1/10W
R321	1-218-879-11	METAL CHIP	22K 0.5% 1/10W
R322	1-218-847-11	METAL CHIP	1K 0.5% 1/10W
R323	1-218-855-11	METAL CHIP	2.2K 0.5% 1/10W
R324	1-216-833-11	METAL CHIP	10K 5% 1/10W
R325	1-218-867-11	RES-CHIP	6.8K 5% 1/10W
R326	1-216-833-11	METAL CHIP	10K 5% 1/10W
R327	1-218-871-11	METAL CHIP	10K 0.5% 1/10W
R328	1-216-838-11	METAL CHIP	27K 5% 1/10W
R329	1-216-825-11	METAL CHIP	2.2K 5% 1/10W
R330	1-216-825-11	METAL CHIP	2.2K 5% 1/10W
R331	1-216-825-11	METAL CHIP	2.2K 5% 1/10W
R332	1-216-825-11	METAL CHIP	2.2K 5% 1/10W
R333	1-216-847-11	METAL CHIP	150K 5% 1/10W
R334	1-218-853-11	METAL CHIP	1.8K 0.5% 1/10W
R335	1-216-829-11	METAL CHIP	4.7K 5% 1/10W
R336	1-216-833-11	METAL CHIP	10K 5% 1/10W
R346	1-216-833-11	METAL CHIP	10K 5% 1/10W
R347	1-216-833-11	METAL CHIP	10K 5% 1/10W
R348	1-216-833-11	METAL CHIP	10K 5% 1/10W
R349	1-216-833-11	METAL CHIP	10K 5% 1/10W
R351	1-216-295-91	SHORT	0
R352	1-216-295-91	SHORT	0
R358	1-216-833-11	METAL CHIP	10K 5% 1/10W
R359	1-216-833-11	METAL CHIP	10K 5% 1/10W
R360	1-216-809-11	METAL CHIP	100 5% 1/10W
R401	1-216-295-91	SHORT	0
R402	1-216-295-91	SHORT	0
R403	1-216-817-11	METAL CHIP	470 5% 1/10W
R405	1-216-809-11	METAL CHIP	100 5% 1/10W
R406	1-218-831-11	METAL CHIP	220 0.5% 1/10W
R407	1-218-831-11	METAL CHIP	220 0.5% 1/10W
R408	1-218-831-11	METAL CHIP	220 0.5% 1/10W
R409	1-218-831-11	METAL CHIP	220 0.5% 1/10W
R410	1-218-831-11	METAL CHIP	220 0.5% 1/10W
R411	1-218-831-11	METAL CHIP	220 0.5% 1/10W
R412	1-216-833-11	METAL CHIP	10K 5% 1/10W
R413	1-218-867-11	RES-CHIP	6.8K 5% 1/10W
R414	1-216-822-11	METAL CHIP	1.2K 5% 1/10W
R423	1-216-833-11	METAL CHIP	10K 5% 1/10W
R426	1-216-833-11	METAL CHIP	10K 5% 1/10W
R430	1-216-797-11	METAL CHIP	10 5% 1/10W
R439	1-216-864-11	SHORT	0
R601	1-216-809-11	METAL CHIP	100 5% 1/10W

Ref. No.	Part No.	Description	Remarks
R607	1-216-864-11	METAL CHIP	0
R608	1-216-864-11	METAL CHIP	0
R609	1-216-864-11	METAL CHIP	0
R612	1-216-864-11	METAL CHIP	0
R621	1-216-864-11	METAL CHIP	0
		(NS305/NS310/NS405/NS410/NS415:ME,AUS)	
		< COMPOSITION CIRCUIT BLOCK >	
* RB102	1-233-270-11	NETWORK, RES (8 GANG) 10K	
		< VARIABLE RESISTOR >	
RV401	1-223-583-11	RES, ADJ, CARBON 1K	
		< VIBRATOR >	
X101	1-795-174-11	VIBRATOR, CERAMIC (16.5MHz)	
X102	1-781-867-21	VIBRATOR, CRYSTAL (27MHz)	
△	1-468-645-11	POWER BLOCK(HS11S1U)	
		(NS305:TW/NS315:US.CND,MX/NS415:US,CND)	
		*****	
		< DIODE >	
D101	9-885-020-49	DIODE S1WBA60	
D312	9-885-020-50	DIODE D1N60	
D621	9-885-020-51	LED SLR-343VC	
D622	9-885-020-51	LED SLR-343VC	
		< IC >	
IC101	9-885-020-53	IC MIP2E4	
IC411	9-885-020-54	IC XC6201P352	
		< IC LINK >	
△ P511	9-885-020-57	IC PROTECTOR 20N(1.5A/125V)	
		< PHOTOCOUPLER >	
△ PC101	9-885-020-59	PHOTOCOUPLER TLP421F	
		< TRANSISTOR >	
Q211	9-885-020-60	TRANSISTOR 2SJ525	
Q311	9-885-020-61	TRANSISTOR 2SD1768S	
Q611	9-885-020-62	TRANSISTOR 2SC2655	
△	1-468-647-11	POWER BLOCK(HS11S1F) (NS315:PX,E,BR)	
		*****	
		< DIODE >	
D621	9-885-020-51	LED SLR-343VC	
D622	9-885-020-52	LED SLR-343MC	
		< IC >	
IC101	9-885-020-53	IC MIP2E4	
IC411	9-885-020-54	IC XC6201P352	
		< IC LINK >	
△ P511	9-885-020-57	IC PROTECTOR 1.5A	

**Note :**  
The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

**Note :**  
Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

## POWER (HS11S1F)

## POWER (ETXNY381N2F/ETXNY381E2F)

Ref. No.	Part No.	Description	Remarks
< TRANSISTOR >			
Q211	9-885-020-60	TRANSISTOR 2SJ-525	
Q311	9-885-020-61	TRANSISTOR 2SJ1768S	
Q611	9-885-020-62	TRANSISTOR 2SC2655	
< TRANSFORMER >			
△ T101	9-885-020-66	TRANSFORMER,POWER	
△	1-468-646-11	POWER BLOCK(ETXNY381N2F) (NS305:ME,EA,AUS,HK,SP,KR/ NS315:AR/NS415:ME,AUS)	
*****			
△	1-468-648-11	POWER BLOCK(ETXNY381E2F) (NS305:AEP,UK,RUS/NS310/NS405/NS410)	
*****			
< DIODE >			
D104	9-885-020-88	DIODE RL1N4005	
D105	9-885-020-88	DIODE RL1N4005	
D106	9-885-020-88	DIODE RL1N4005	
D107	9-885-020-88	DIODE RL1N4005	
D205	9-885-020-88	DIODE RL1N4005	
< FUSE >			
△ F101	9-885-020-87	FUSE 2A/250V (N2F)	
< IC >			
IC101	9-885-020-83	IC MIP2E3	
< TRANSISTOR >			
Q202	9-885-020-41	TRANSISTOR 2SD965	
Q203	9-885-020-41	TRANSISTOR 2SD965	
Q204	9-885-020-41	TRANSISTOR 2SD965	
Q301	9-885-020-42	TRANSISTOR 2SB1592	
< ZENER DIODE >			
ZD201	9-885-020-44	ZENER DIODE IZB33	
MISCELLANEOUS			
*****			
△ 4	1-468-645-11	POWER BLOCK (HS11S1U) (NS305:TW/NS315:US,CND,MX/NS415:US,CND)	
△ 4	1-468-646-11	POWER BLOCK (ETXNY381N2F) (NS305:ME,EA,AUS,HK,SP,KR/ NS315:AR/NS415:ME,AUS)	
△ 4	1-468-647-11	POWER BLOCK (HS11S1F)(NS315:PX,E,BR)	
△ 4	1-468-648-11	POWER BLOCK (ETXNY381E2F) (NS305:AEP,UK,RUS/NS310/NS405/NS410)	
△ 11	1-575-651-21	CORD, POWER (NS305:AEP,UK,RUS,HK/NS310/NS405/NS410)	
△ 11	1-757-140-11	CORD, POWER (NS305:ME,EA,SP/NS315:PX,E/NS415:ME)	
△ 11	1-757-813-11	CORD, POWER (NS315:BR)	
△ 11	1-757-901-11	CORD, POWER (NS315:AR)	
△ 11	1-782-752-31	CORD, POWER (NS305:KR)	
△ 11	1-783-531-11	CORD, POWER (NS315:MX)	

Ref. No.	Part No.	Description	Remarks
△ 11	1-790-588-11	CORD, POWER (NS305:AUS/NS415:AUS)	
△ 11	1-823-597-11	CORD, POWER (NS315:US,CND/NS415:US,CND)	
△ 11	1-824-303-11	CORD, POWER (NS305:TW)	
15	1-961-634-11	PF-127 (HARNESS)	
16	1-961-632-11	FF-206 (HARNESS) (NS415)	
22	1-823-831-11	FAE-9 (NS305:AEP,UK,RUS/NS310/NS405/NS410)	
ACCESSORIES			
*****			
1-477-167-11		REMOTE COMMANDER (RMT-D141A) (NS305:ME,EA,AUS,HK,SP,TW,KR/NS315)	
1-477-168-11		REMOTE COMMANDER (RMT-D142A) (NS415:US,CND)	
1-477-168-41		REMOTE COMMANDER (RMT-D1420) (NS415:ME,AUS)	
1-477-169-11		REMOTE COMMANDER (RMT-D141P) (NS305:AEP,UK,RUS)	
1-477-170-11		REMOTE COMMANDER (RMT-D142P) (NS310/NS405/NS410)	
1-569-008-21		ADAPTOR, CONVERSION 2P (NS305:EA/NS315:PX,E,AR)	
1-751-271-11		CORD, CONNECTION (NS305/NS310/NS315:US,CND,PX,MX,E/ NS405/NS410/NS415)	
1-770-019-11		ADAPTOR, CONVERSION PLUG 3P (NS305:UK,HK/NS405:UK)	
1-823-364-21		CORD, CONNECTION	
3-071-119-11		COVER, BATTERY (RMT-D141A)	
3-072-138-01		COVER, (SANWA) BATTERY (FOR RMT-D142A/D1420)	
3-072-140-01		COVER (SMK), BATTERY (FOR RMT-D142P)	
3-073-379-11		MANUAL, INSTRUCTION (ENGLISH) (NS315:US,CND,PX/NS415:US,CND)	
3-073-379-21		MANUAL, INSTRUCTION (FRENCH) (NS315:CND/NS415:CND)	
3-073-381-11		MANUAL, INSTRUCTION (ENGLISH) (NS305:ME,EA,AUS,HK,SP,TW,KR/NS415:ME,AUS)	
3-073-381-22		MANUAL, INSTRUCTION (SIMPLIFIED CHINESE) (NS305:SP)	
3-073-381-31		MANUAL, INSTRUCTION (TRADITIONAL CHINESE) (NS305:HK)	
3-073-381-41		MANUAL, INSTRUCTION (TRADITIONAL CHINESE) (NS305:TW)	
3-073-381-51		MANUAL, INSTRUCTION (KOREA) (NS305:KR)	
3-073-381-61		MANUAL, INSTRUCTION (ARABIC) (NS305:EA, ME2)	
3-073-381-71		MANUAL, INSTRUCTION (FRENCH) (NS305:ME5)	
3-074-263-11		MANUAL, INSTRUCTION (FRENCH) (NS305:AE1/NS310:AE1/NS405:AE1/MS410:AE1)	
3-074-263-21		MANUAL, INSTRUCTION (GERMAN) (NS305:AE1/NS310:AE1/NS405:AE1/MS410:AE1)	
3-074-263-31		MANUAL, INSTRUCTION (ITALIAN) (NS305:AEP/NS310:AE2/NS405:AEP/NS410:AE2)	
3-074-263-41		MANUAL, INSTRUCTION (DUTCH) (NS305:AE1/NS310:AE1/NS405:AE1/NS410:AE1)	

### Note :

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### Note :

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<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remarks</u>
	3-074-263-51	MANUAL, INSTRUCTION (SPANISH) (NS305:AE2/NS310:AE2/NS405:AE2/NS410:AE2)	
	3-074-263-61	MANUAL, INSTRUCTION (PORTUGUESE) (NS305:AE2/NS310:AE2/NS405:AE2/NS410:AE2)	
	3-074-263-71	MANUAL, INSTRUCTION (DANISH) (NS305:AE2/NS310:AE2/NS405:AE2/NS410:AE2)	
	3-074-263-81	MANUAL, INSTRUCTION (FINNISH) (NS305:AE2/NS310:AE2/NS405:AE2/NS410:AE2)	
	3-074-263-91	MANUAL, INSTRUCTION (SWEDISH) (NS305:AE2/NS310:AE2/NS405:AE2/NS410:AE2)	
	3-074-264-11	MANUAL, INSTRUCTION (ENGLISH) (NS305:UK, RUS/NS405:UK)	
	3-074-264-21	MANUAL, INSTRUCTION (RUSSIAN) (NS305:RUS)	
	3-074-265-11	MANUAL, INSTRUCTION (SPANISH) (NS315:E,MX)	
	3-075-967-11	MANUAL, INSTRUCTION (PORTGUESE) (NS315:BR)	
	3-076-009-11	MANUAL, INSTRUCTION (SPANISH) (NS315:AR)	

